national

FEBRUARY 1955

SAFETY NEWS

NONE OF US CAN AFFORD AN ACCIDENT

A LITTLE SAFETY IS GOOD FOR LIFE!

BANNERS FOR SAFETY

see page 31

M·S·A ...a complete line of Safety Clothing

Here's your *one source of supply* for everything in personnel protective clothing . . . from hoods right down to safety spats . . . in plastic, chrome leather, duck, asbestos, rubber and synthetics.

Because M.S.A. offers a complete safety wardrobe, you get exactly the item you need, in the material best suited for the job. Essential, too, are the comfort and durability qualities of M.S.A. safety clothing. Our tailoring is designed to meet worker's demands for freedom-fit, and, at the same time, provides maximum wear. Described here are a few of the items in our safety clothing line. Write for complete details.

M·S·A DECONTAMINATION SUITS

Chemical-Type is made from flexible butyl-fairprene material. Complete body and breathing protection where extreme chemical hazards exist. Air, cooled or heated, is supplied to both suit and hood through a combination hose and safety cable entering suit from back. Exhaust air is vented around neck area. Suit takes on balloon-effect when air enters. This provides greater comfort, working freedom. Also available—M.S.A. Acid-Type Suit, made of neoprene-fairprene fabric. Same features as Chemical-Type. Both available in small, medium, large sizes.

M.S.A. FIRE SUITS

Available in glass fiber cloth, coated inside with neoprene, aluminized outside. Also hoods in same materials.

M.S.A. HOODS

Protection against acid splash, caustics, corrosive liquids, gasoline, vapors, fumes, dusts. Available—plastic, rubberized cloth.

M.S.A. CHEMKLOS

Made throughout of Dynel. Resists acids, caustics, mildew, moths. Last longer, smart appearance. Coveralls, trousers, shirts.

M.S.A. APRONS

Available in flame-proof duck, asbestos, chrome leather, synthetic rubber, vinyl plastic. Protection against all job hazards.

M.S.A. RUBBERIZED PROTECTIVE SUITS

For use where acids or caustics exist. Can be worn with breathing apparatus for emergencies.

M.S.A. GLOVES

Chrome leather, vinyl plastic coated, rubber coated, asbestos. Every style, for every type of job. Also, special heat-resistant gloves.

M.S.A. LEGGINGS

Made of asbestos, chrome leather, flame-proof duck. Comfortable fit, easy to get into or take off. Wire stitched seams.

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SAFETY EQUIPMENT HEADQUARTERS

Call the M.S.A. man on your every safety problem . . . his job is to help you

NEW WILLSON FeatherSpec®

Contour-line BROW REST

Style FW3

adds extra comfort and protection!

This recent Willson development features a handsome bronze *acetate butyrate* frame that quickly wins worker approval!

Its integrally molded brow rest holds lenses well away from the eyes. Extra space permits cool comfort. And all workers—especially those who wear prescription glasses—welcome the additional clearance provided.

Like other popular Willson FeatherSpecs® shown, the new style FW3 is exceptionally light in weight. Distortion-free lenses are .040" thick acetate, readily removable, available in clear or green. Matching half-plastic, half cable temples adjust for snug fit.

These comfortable spectacles will be worn all day long without fatigue or eye strain. They provide ample impact protection for light grinding, woodworking, spot welding, inspection and other jobs which do not demand heavy duty goggles.

Ask your Willson distributor to show you the new FW3 FeatherSpec® with Brow Rest. Or write for bulletin.

ALSO AVAILABLE—
POPULAR METAL FRAME FeatherSpecs®...

FW1—.040" thick clear or green lens, wire core plastic skull temples; also **FW61**, same with .060" thick lens.

FW2—.040" thick clear or green lens, industrial covered cable temples; also **FW62**, same with .060" thick lens.

More than 300 Safety Products Carry This Famous Trademark

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Leaders in Research and Development of Safety Equipment Since 1870

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National Safety Council Vol. 71, No. 2

SAFETY NEWS

Published monthly by National Safety Council

FEBRUARY, 1955

THE COVER: A new Council service designed to put more showmanship into safety. (See page 31)

EDITORIAL

17 New Frontiers

FEATURE ARTICLES

18 Jules Verne Wasn't Dreaming

22 Automation, Safety's New Ally—*John B. Stirling*

24 Safety Training—100 Per Cent—*J. B. Yanity*

26 Hearing Is Worth Saving—*Louise E. Davidson, R.N.*

28 All in the Night's Work

30 The New Man (Diary of a Safety Engineer)—*Bill Andrews*

31 Safety—Rain or Shine

32 High-Line Hazards on a Table Top—*John F. Phelan*

34 Is Your Suggestion Program Safety Conscious? —*Arthur D. Murphy*

35 Free Insurance—*Robert D. Gidel*

36 The Radial Saw—Data Sheet D-353

39 Changes in ASA Standard Z16.1

42 Build Them Yourself—*F. P. Hutchinson*

50 Taking Stock—*A. C. Rubel*

55 Eye Protection Got the Green Light—*A. L. Schwan*

70 A Congress Headliner of 1952

DEPARTMENTS

4 For Distinguished Service

6 Safety Valve

8 Accident Barometer

10 Wire from Washington

12 Coming Events

14 Cases for Comment

40 Small Businesses and Associations

48 Green Cross News

52 Industrial Health

58 Lighter Side

61 Safety Library

66 Safety Films

73 Personals

97 What's New in Council Services

98 Safety Posters

118 Calendar Contest Winners

121 New Safety Equipment

Statements and opinions advanced in signed articles are personal expressions of the authors, not necessarily those of the National Safety Council.

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Chicago 11, Illinois

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NEW!

10-inch safety field boot

all the protection of a high-cut with the comfort of a regular shoe

STOCK
No. 1914

Here is a brand new type of heavy duty field boot that has received remarkable acceptance in the short time since we introduced it. The 10-inch height gives all the ankle and leg protection the average field worker needs, plus greater all-weather comfort. Two adjustments, at top and ankle, provide fitting as snug as the wearer wants it. Dozens of companies have already adopted this new boot as standard equipment for all heavy outdoor jobs. Order a sample pair for display. Your men will like it, too.

LEHIGH
SAFETY SHOE COMPANY
EMMAUS, PA.

FOR DISTINGUISHED SERVICE

THREE TYPES of awards are given by the National Safety Council to industrial units in recognition of outstanding performance in accident prevention:

1. **THE AWARD OF HONOR** is available to units whose records, though not perfect, meet rigorous standards of excellence. These standards take into account the previous experience of the unit as well as the experience of the industry in which it operates. A unit must qualify on both frequency rate and severity rate. The Award of Honor is available also to units which complete 3,000,000 man-hours without a disabling injury.

2. **THE AWARD OF MERIT** has similar, but less exacting, requirements. Minimum number of injury-free man-hours needed to qualify is 1,000,000.

3. **THE CERTIFICATE OF COMMENDATION** is available only for injury-free records covering a period of one or more full calendar years and totaling 200,000 to 1,000,000 man-hours.

Details of eligibility requirements may be obtained by writing to the Statistical Division, National Safety Council.

★ ★ ★ ★ ★

AWARDS OF HONOR

B. F. Goodrich Co., Martha Mills, Thomaston, Ga.

Daystrom Instrument Co., Archbald, Pa. Entire company.

Douglas Aircraft Co., Inc., Santa Monica (Calif.) Division.

Ford Motor Co., Dallas Assembly Plant.

General Electric Co., Hanford Atomic Products Operations.

Illinois Central Railroad, Burnside Shops, Chicago.

Permacel Tape Corp., New Brunswick, N. J. Entire company.

United States Rubber Co., Naugatuck (Conn.) Footwear Plant.

AWARDS OF MERIT

Alan Wood Steel Co., Coke & Chemical Co., Swedeland, Pa.

Allegheny Ludlum Steel Corp., Plant No. 4, W. Leechburg, Pa.

The British American Oil Co., Ltd., Toronto, Central Region, Marketing Department.

Carrier Corp., Geddes Street Plant, Thompson Road Plant, Syracuse, N. Y.

Ford Motor Co., Three awards: Aircraft Turbine Plant, Cleveland (Ohio) Foundry, Livonia Automatic Transmission Plant.

The Formica Co., Winton Place Plant, Cincinnati.

General Electric Co., Two awards: Direct Current Motor & Generator Department, Fort Wayne, Ind., and Erie, Pa.; Motor Department, Somersworth, N. H.

Lee Rubber & Tire Corp., Republic Rubber Division, Youngstown, Ohio.

Rohr Aircraft Corp., Chula Vista (Calif.) and Riverside (Calif.) Divisions.

Solar Aircraft Co., San Diego Plant.

The United States Printing and Lithograph Co., St. Charles (Ill.) Division.

United States Spring & Bumper Co., Division of Rheem Manufacturing, Los Angeles.

Western Electric Co., Inc., Four Awards: Cleveland Distributing House, Newark Distributing House, St. Louis Distributing House, Washington (D. C.) Distributing House.

West Point Manufacturing Co., Lanett Mill Division, West Point, Ga.

A Safety Record's Silver Anniversary

Du Pont's Benger Laboratory at Waynesboro, Va., has completed 25 years of operation without a disabling injury.

The mark of nearly 6,250,000 injury-free hours, set at the stroke of the New Year, surpassed in man-hours-worked the quarter century safety mark established just six months ago by the company's Rubber Laboratory at Deepwater Point, N. J.

Operating without a lost-time accident since it started up on January 1, 1930, Benger Laboratory personnel, averaging some 240, perform jobs ranging from synthesizing a new fiber to hand ironing test materials. They have amassed 9,131 injury-free days.

The type of work done in the Benger Laboratory, which developed "Orlon" acrylic fiber, "requires designing new types of machines and experimenting with hazardous chemicals and reactions," Dr. L. F. Salisbury, laboratory director, said.

The Benger Laboratory, which also does research on acetate yarn, has won 14 awards from the National Safety Council in the past 25 years.

Air Casualties

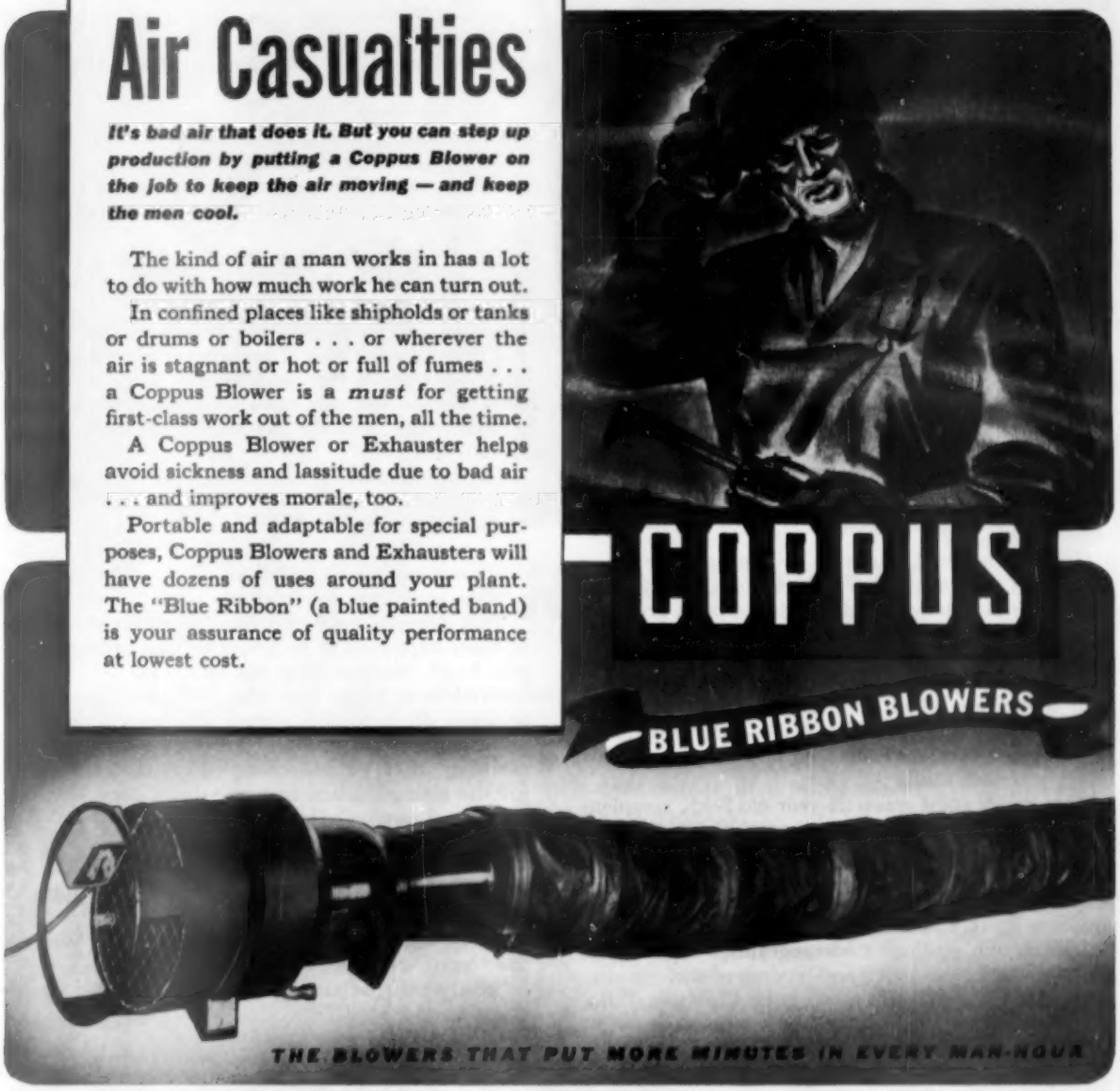
It's bad air that does it. But you can step up production by putting a Coppus Blower on the job to keep the air moving — and keep the men cool.

The kind of air a man works in has a lot to do with how much work he can turn out.

In confined places like shipholds or tanks or drums or boilers . . . or wherever the air is stagnant or hot or full of fumes . . . a Coppus Blower is a *must* for getting first-class work out of the men, all the time.

A Coppus Blower or Exhauster helps avoid sickness and lassitude due to bad air . . . and improves morale, too.

Portable and adaptable for special purposes, Coppus Blowers and Exhausters will have dozens of uses around your plant. The "Blue Ribbon" (a blue painted band) is your assurance of quality performance at lowest cost.



CABLE MANHOLE AND TANK VENTILATORS — BOILER MANHOLE BLOWERS AND EXHAUSTERS — HEAT KILLERS — SHIPHOLD VENTILATORS . . . DESIGNED FOR YOUR INDUSTRY — ENGINEERED FOR YOU

MAIL THIS COUPON To Coppus Engineering Corp., 122 Park Avenue, Worcester 2, Mass. Sales offices in THOMAS' REGISTER. Other "Blue Ribbon" Products in BEST'S SAFETY DIRECTORY.

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- ☐ around cracking stills.
- ☐ exhausting welding fumes.
- ☐ stirring up stagnant air wherever men are working or material is drying.
- ☐ drying of walls, sheets, etc., after treated with coating material.

NAME .....

COMPANY .....

ADDRESS .....

CITY .....

(Write here any special ventilating problem you may have.)

THE SAFETY VALVE

Brotherhood

"No man is ever completely and permanently a stranger to his fellow man," said Albert Schweitzer. That's a good text for Brotherhood Week, to be observed February 20-27, under the sponsorship of the National Conference of Christians and Jews.

The sponsors, of course, do not intend brotherhood to be limited to those two groups. There are quite a few million of God's children who bear other labels.

I got a personal lesson in brotherhood not long ago when the Park Ridge Community Church sponsored a brotherhood Sunday of its own. A group of students from Chicago's International House were invited out to spend the week end with members of the congregation, to attend church with them and meet later at an informal tea.

Among them were Europeans of several denominations, one Moslem from Iraq and one from Pakistan, and two Sikhs.

Our house guest was a 22-year-old Sikh, complete with beard and turban. Son of a physician in India, he was majoring in electrical engineering at Illinois Tech. He was physically handsome and his command of English and general cultural level would make a lot of Caucasians seem like barbarians.

The church sent out a mimeographed letter briefing the hosts on the care and feeding of their guests.

"Some of your guests may not be Christians," the letter reminded us. "Some of them also have political and economic views at variance with ours. But remember that most of you are Protestants and Republicans or Democrats because your parents were."

To be prepared, I read what the *Encyclopaedia Britannica* had to say about the Sikhs. What I read was distinctly favorable. Their principal tenets are those to which most Christians could subscribe. And I can remember the time when the average churchman would have regarded these people as poor lost heathens to be saved!

"Do the Sikh beliefs discourage attending services of other faiths?" I asked.

"Oh, no," replied Mr. Singh. "We believe there is good in all religions and we are free to attend their churches. And others are welcome at our places of worship, providing they remove their shoes and keep their heads covered."

That, it seemed to me, was in keeping with the true spirit of Christianity, if not with its outward forms.

After S-D Day

If S-D Day accomplished nothing else, it revealed widespread interest in safety, extending from the White House down to individual motorists in your block and mine.

It is inconceivable that any person living in the U.S.A. could have been unaware that December 15, 1954, was Safe Driving Day. The greatest publicity campaign safety has yet known bombarded the public consciousness through the printed page, radio and TV.

Headline after headline, broadcast after broadcast, and one TV show after another, outdoor advertising panels, banners, posters, lapel buttons and cards—every known medium of communication—contributed to getting the idea of avoiding sudden death and injury across to the reading and listening public who provide the raw material for accidents.

What was actually accomplished in terms of casualties?

On the comparable day of 1953—Wednesday, December 16—a survey by the President's Action Committee for Traffic Safety showed that 60 persons died in traffic. On S-D Day there were 51 traffic deaths—a saving of nine lives.

Were nine lives worth all the effort?

That depends on whose lives were saved. If one of them happened to be yours or that of somebody you loved, you can skip the question.

In addition to the nine who didn't die, there were undoubtedly several hundred who weren't injured and hundreds whose cars were still functioning the morning after. And among those depending on private transportation to earn a living, loss of a car may be almost as crippling as a broken arm. The mental anguish is sometimes as great.

An energetic follow-up is needed to capitalize on the benefits of such a project. S-D Day captured public interest; never before had so many people been thinking and talking about safety. But, as the Negro spiritual puts it:

"Everybody talkin' about heaven ain't goin' there."

In This Issue . . .

Any safety engineer who had 40 men under water at one time in new and specially designed breathing apparatus and facing a variety of uncertain hazards would be sure to have some anxious moments. Filming *20,000 Leagues Under the Sea* was an extreme example of what the movie industry faces in manufacturing thrills for cinema audiences. Production of the film was a triumph of training and the use of ingenious equipment. (Page 18)

* * *

A safety man's view of automation in the automotive industry is presented in the first article on the subject to appear in the News. It's a subject you'll be hearing a lot of from now on. (Page 22)

Carman Fish

PROGRESS

Today's 19 styles of *austempered* steel toes include every advancement over the years . . . from the original Munson type steel toe crudely hammered out in an old New England blacksmith shop to the modern precision-built WINGUARDS.

This progressive line of steel toes offer your workers not only up-to-the-minute styling but added safety factors as well.

Safety Box Toe Company

812 STATLER BUILDING · BOSTON

THE ACCIDENT BAROMETER

Prepared by the Statistical Division, National Safety Council

ACCIDENTAL DEATHS in October totaled 7,600, a decrease of 400 from October 1953. The reduction was shared about equally by each class.

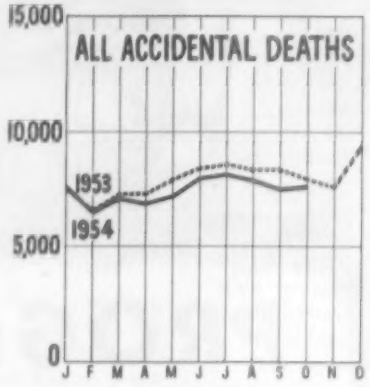
The total for ten months was 74,200, or 5 per cent below the 1953 comparable total of 78,000. There was a sizable reduction in fatal home accidents, moderate decreases in motor-vehicle and work, and a small reduction in public non-motor-vehicle deaths.

Motor-Vehicle Deaths

The October total of motor-vehicle deaths was 3,580, a decrease of 2 per cent from 3,650 in 1953. Compared to 1952, it was a reduction of 2 per cent, also.

Deaths for the ten months totaled 29,350, a decrease of 6 per cent from the 1953 total of 31,100. The ten-month death rate per 100,000,000 vehicle miles is not available, but the nine-month rate was 6.2, a reduction of 9 per cent from the 1953 comparable rate of 6.8.

Of the 47 states reporting for ten months, 36 had fewer deaths than in 1953 and 11 had more deaths. A total of 484 cities with populations of more than 10,000 reported a decrease of 10 per cent for October and 8 per cent for the ten-month period.



	1954	1953	Change
October	7,600	8,000	—5%
Ten Months	74,200	78,000	—5%

Regional changes from 1953 in the ten-month death totals were:

North Atlantic	— 7%
South Atlantic	— 9%
North Central	— 7%
South Central	0
Mountain	— 1%
Pacific	— 9%

Work Accidents

Deaths from work accidents numbered approximately 1,200, or 100 less than occurred in October, 1953. The ten-month total was 12,000, a reduction of 5 per cent from 12,600 in 1953.

The October frequency rate per million man-hours in eighteen sectional accident prevention contests conducted by the National Safety Council was 5.55, a decrease of 5 per cent from October 1953. The ten-month rate was 5.64, a reduction of 9 per cent. The October rate for plants in community council contests was 6.09, a reduction of 18 per cent from October 1953. The ten-month rate was 6.62, a decrease of 8 per cent.

Public Deaths

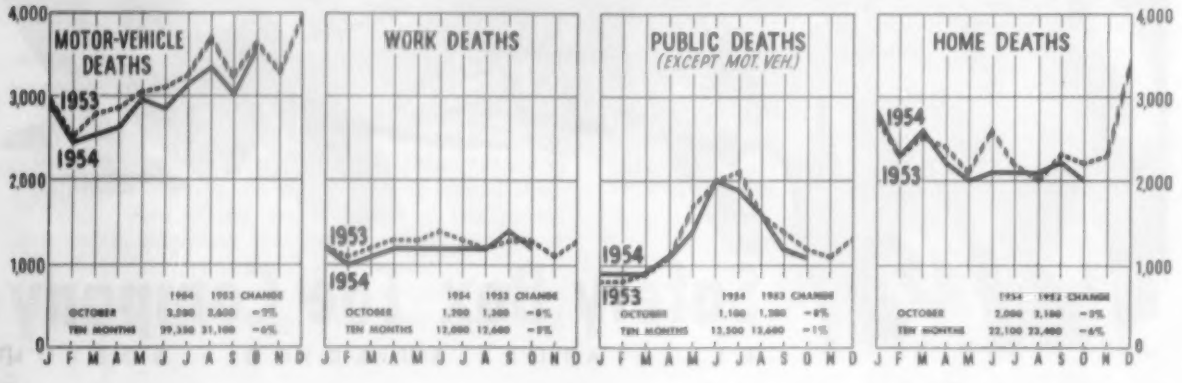
There were approximately 1,100 deaths from public non-motor-vehicle accidents in October, or 8 per cent below October 1953.

The ten-month death total was 13,500, about 100 fewer than occurred in the first ten months of 1953. Decreases in deaths from drowning, firearms and transportation accidents were nearly offset by increases in deaths from burns and falls. There was a moderate increase in deaths of persons 65 years and over. Other age groups showed decreases with the largest change noted for persons 15 to 24 years old.

Home Deaths

October deaths from home accidents numbered approximately 2,000, a decrease of 5 per cent from October 1953.

The January-October total was 22,100, a reduction of 6 per cent from 23,400 in 1953. There were moderate decreases in deaths from mechanical suffocation and falls; small reductions in burns and firearms accidents; and no change in fatal poisonings. All age groups showed decreases from 1953 with the greatest improvement recorded for children 5 to 14 years old.



Never Before...

a safety spectacle with color styling

that's modern and appealing!

A NEW STYL-IZE SHAPE LENS. Styl-Ize Butyrate frames are rugged and stronger . . . provide richer finish in selective colors.

lighter and more comfortable!

ONLY HALF THE WEIGHT of hardened glass. Takes the heavy discomfort out of day long wear, and stays put in proper nose position.

stronger and shatterproof!

TWICE AS STRONG as hardened glass . . . eliminates danger of sharp splinters.

in OPTILITE®* PLANO or PRESCRIPTION SINGLE VISION . . . BIFOCAL

* the new safety lens material. Not a glass . . . not a thermoplastic but an exclusive USSSCO formula of compounded resins.

choice of
3 color frames
FOR MEN
BRONZE, CRYSTAL, BLUE

AN EXCLUSIVE DESIGN
FOR WOMEN

Becoming frames combine strength and sturdiness with style. Women like the light weight —that avoids unsightly marking of the nose.

Burgundy, Blue, Crystal

All Styl-Ize Spectacles meet Federal Specifications for Optical Qualities, Impact Resistance and Strength of Materials.

All Optilite lenses also available in standard P-3 shape, metal and plastic frames.

THE NEW SHAPE
Styl-Ize
INDUSTRIAL SAFETY SPECTACLES

A fully experienced USSSCO service engineer will assist in your eye-protection program. Contact your nearest USSCO Sales Office listed in the classified section of your telephone directory, or write direct.

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Wire from WASHINGTON

By HARRY N. ROSENFIELD
Washington Counsel, National Safety Council

WITH THE CONVENING of the 84th Session of the Congress, the pace of consideration of safety matters has quickened in Washington. In the first two days of this Congressional session, some 1,950 bills were introduced, some of which involve safety matters in one or another way.

President's Message on State of Union

As provided for in the Constitution, the President submitted to the Congress his Message on the State of the Union. The President said some things of substantial importance in the field of safety:

1). **Taxes.** The Federal excise tax on gasoline is due to be reduced on April 1, by operation of statute. The President recommended that the present rate be continued and expressed the hope that reductions could be made next year;

2). **Transportation.** The President promised a Special Message to the Congress, which will have been sent by the time this *Wire* appears in print. This message is expected to outline his 10-year plan for highway improvement; in its preparation, the President said, he will have been aided by a report from his Advisory Committee on a National Highway Program, under the chairmanship of General Clay, and by recommendations from the Conference of State Governors.

The President also noted that a cabinet committee was thoroughly examining Federal transportation policies, to recommend legislation correcting any deficiencies which may be found;

3). **Health.** The President indicated that he would propose (a) "better consumer protection under our existing pure food and drug laws," and (b) "strengthened programs to combat the increasingly serious pollution of our rivers and streams and the growing problems of air pollution."

4). **Labor.** The President stated that "the administration will propose other important measures including occupational safety . . ."

Highways

The Supreme Court of the United States has handed down a decision that a state (in this instance, Illinois) could not suspend the privilege of operating trucks over state highways despite repeated violations of state highway regulations concerning maximum weight and load limitations, when such offending motor-carrier was engaged in interstate operations under the Federal Motor Carrier Act *(Castle v. Hayes Freight Lines, Inc.*, December 6, 1954).

The Bureau of Public Roads, in its Annual Report for 1954, outlined developments in highway safety activities and the effect of highway design on accidents.

The Conference of State Governors has appointed a liaison committee, headed by Governor Thomas Stanley of Virginia, to work with Congress for the passage of the President's highway program.

Among the bills introduced in Congress affecting highways, H.R. 18 (Dingell) and H.R. 195 (Staggers) provide for a cross-country or national super-highway system, and H. J. Res. 113 (Steed) would set up a Highway Finance Corporation while H.R. 1798 (Hand) would establish a National Superhighway Commission; H.R. 234 (Buckley), H.R. 235 (Dondero) and H.R. 370 (Elliot) would revise the Federal-aid highway act; H.R. 154 (Multer) would provide for a nationally uniform system of automobile registration; and H.R. 19 (Dingell) would set aside a portion of the gas excise tax exclusively for highway aid.

Industrial Safety

H.R. 433 (Heseltine) proposes amendment of the National Gas Act so as to authorize the Federal Power Commission to prescribe safety regulations for natural-gas companies. And H.R. 163 (Price) would require the installation of communication systems on railroads.

The Federal Trade Commission has promulgated a revision of its 1935 Trade Practice Rules for the Fire Extinguishing Appliance Industry; the revised rules do not cover automatic sprinkler systems or automatic fire apparatus.

The Interstate Commerce Commission has deferred from January 1, 1955 to July 1, 1955, the effective date of its rules and instructions for the inspection and testing of electrically-operated freight or pasenger trains which are operated by a single set of controls.

Air and water pollution continues to be a matter of considerable concern. The President, in his State of the Union Message, promised to propose "strengthened programs." The Secretary of Health, Education and Welfare called for expanded activity, in this field, particularly by way of research and field investigations. And the Surgeon General of the United States Public Health Service called attention to the "critical need" for action to prevent water pollution, and stated that in connection with air pollution "there is a basic need for intensified research by all groups concerned:—industry, private laboratories, communities, State and Federal agencies." H.R. 835 (Ray) provides for research into the causes and methods of control of air pollution: and H.R. 1833 (Radwan) deals with water pollution in certain international waters.

—To page 102

Above: #4310, brown moccasin-style slip-on, with leather-lined steel toe box. Springy, oil-resisting Nitrocrepe sole and heel.

Below: #1302, black U-wing oxford with leather-lined steel toe box. Leather sole and rubber heel. (Also in brown—#4302.)

©1955 Melville Shoe Corporation

These new dress-weight Thom McAns are the safest and smartest shoes of any season

THESE NEW Thom McAns are handsome as they are safe. And that's saying a lot!

Here are dress-weight work shoes that your men will be anxious to own for their own after-hours pleasure—yet, like each and every pair of Thom McAn safety shoes, they offer rugged, built-in protection necessary on the job.

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COMING EVENTS

In the Field of Safety

Feb. 27, Mar. 1, New Orleans
Southern Safety Conference and Exposition (Jung Hotel). W. L. Groth, executive director, P.O. Box 8927, Richmond 25, Va.

Mar. 1-3, Urbana, Ill.
Forty-first Illinois Annual Conference on Highway Engineering. William S. Pollard, Jr., assistant conference director, College of Engineering, University of Illinois, Urbana, Ill.

Mar. 8-9, Philadelphia
Twenty-first Annual Philadelphia Regional Safety and Fire Conference and Exhibit. (Broadwood Hotel). Walter W. Matthews, managing director, Philadelphia Safety Council, 17th and Sansom Streets, Philadelphia 3, Pa.

Mar. 21-22- Boston, Mass.
Thirty-fourth Annual Massachusetts Safety Conference (Hotel Statler). Sponsored by the Safety Councils of Massachusetts. Bruce Campbell, manager, Massachusetts Safety Council, 31 State St., Boston.

Mar. 21-22, Houston, Texas
Annual Texas Safety Conference (Rice Hotel). J. O. Musick, general manager, Texas Safety Association, Inc., 830 Littlefield Bldg., Austin, Texas.

Mar. 22, Madison, Wis.
Wisconsin Canners Safety Institute.*

Mar. 21-23, Los Angeles
Second Annual Southern California Safety Congress and Exhibit. (Ambassador Hotel). Joseph M. Kaplan, secretary-manager, Greater Los Angeles Chapter, NSC, 610 South Main St., Los Angeles 14.

Mar. 29-31, Pittsburgh, Pa.
Thirtieth Annual Western Pennsylvania Safety Engineering Conference and Exhibit (Hotel William Penn). Harry H. Brainerd, executive manager, 605 Park Bldg., Pittsburgh 22, Pa.

Mar. 30-31, Indianapolis
Eighth Central Indiana Safety Conference and Exhibit (Claypool Hotel). Jack E. Gunnell, Indianapolis Safety Council, 320 N. Meridian St., Indianapolis 11, Ind.

Mar. 31, Apr. 1, Kansas City, Mo.
Central States Safety Congress (Municipal Auditorium and President Hotel). George M. Burns, director, Kansas City Safety Council, 419 Dwight Bldg., Kansas City, Mo.

Apr. 4-5, Toronto, Ont.
Industrial Accident Prevention Associations, Annual Conference (Royal York Hotel). R. G. D. Anderson, general manager, 90 Harbour St., Toronto 1, Ont.

Apr. 11-15, New York
Twenty-fifth Annual Safety Convention and Exposition, Greater New York Safety Council. (Hotel Statler). Paul F. Stricker, executive vice-president, Greater New York Safety Council, 60 East 42nd Street, New York 17.

Apr. 19-20, Fort Wayne, Ind.
Northeastern Indiana Safety Conference and Exposition (Chamber of Commerce Building). Ivan A. Martin, manager, Safety Council, Chamber of Commerce of Fort Wayne, Fort Wayne 2, Ind.

Apr. 19-21, Niagara Falls, N. Y.
Fifteenth Western New York Safety Conference, in cooperation with the American Society of Safety Engineers (Niagara Hotel). Patsy E. Gismondi, executive secretary, 1436 Delaware Ave., Buffalo 9, N. Y.

Apr. 26-28, Grand Rapids, Mich.
Twenty-fifth Annual Michigan Safety Conference. (Pantlind Hotel and Civic Auditorium). R. H. Goring, executive secretary, c/o Michigan Bell Telephone Company, Detroit 26, Mich.

Apr. 26-28, Cleveland
Twenty-fifth All Ohio Safety Congress and Exhibit (Hotel Cleveland and Hotel Hollenden). Headquarters at Hotel Cleveland. A. W. Moon, congress manager, c/o Division of Safety and Hygiene, Industrial Commission of Ohio, Columbus 15, Ohio.

Apr. 28, Platteville, Wis.
Southwest Regional Safety Conference.*

Wide awake now-but TOO LATE!

Courtesy General Electric Co.

May 2-4, Allentown, Bethlehem, Easton, Pa.
Twenty-eighth Annual Eastern Pennsylvania Safety Conference. Harold A. Seward, secretary-treasurer, Lehigh Valley Safety Council, 602 E. Third St., Bethlehem, Pa.

May 13, Marinette, Wis.
Fox River Valley and Lakeshore Regional Safety Conference.*

May 16-18, Syracuse
Central New York Safety Conference & Exposition. Newell C. Townsend, administrative secretary, Safety Division, Syracuse Chamber of Commerce, 351 S. Warren St., Syracuse 2, N. Y.

May 17, Madison, Wis.
Rock River Valley Regional Safety Conference.*

May 18-20, Winston-Salem, N. C.
Twenty-fifth Annual North Carolina Safety Conference (Robert E. Lee Hotel). H. S. Baucom, safety director, North Carolina Industrial Commission, Raleigh, N. C.

May 19, Racine, Wis.
Southeast Lakeshore Regional Safety Conference.*

May 19-20, Duluth, Minn.
Thirty-first Annual Conference of the Lake Superior Mines Safety Council (Hotel Duluth). John A. Johnson, secretary, 18 Federal Bldg., Duluth 2, Minn.

June 2-4, Richmond, Va.
Virginia Safety Association, Annual Meeting. (Jefferson Hotel). William M. Myers, executive secretary, Virginia Safety Association, Room 302, 1103 E. Main St., Richmond 19, Va.

June 7-8, Hartford, Conn.
Tenth Annual Conference of the Connecticut Safety Society (Statler Hotel). William G. Willse, manager, National of Hartford Group, 1000 Asylum Avenue, Hartford 15, Conn.

June 7, Wisconsin Rapids, Wis.
Wisconsin River Valley Regional Safety Conference.*

June 9, New Richmond, Wis.
Northwest Regional Safety Conference.*

Sept. 15-16, York Harbor, Me.
Twenty-eighth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, secretary, Department of Labor and Industry, State House, Augusta, Me.

Oct. 17-21, Chicago
Forty-third National Safety Congress and Exposition. (Conrad Hilton Hotel). R. L. Forney, secretary, National Safety Council, 425 N. Michigan Ave., Chicago, 11.

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*For information about Wisconsin Regional Safety Conferences write R. W. Gillette, exec. secretary-treasurer, Wisconsin Council of Safety, State Office Bldg., Madison 2, Wis.

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CASES for COMMENT

Compiled by
ROBERT D. GIDEL
Senior Consulting Engineer
Industrial Department, NSC

IS THAT INJURY chargeable to your occupational injury record?

In some cases there is reasonable doubt as to whether the injury arises out of or in the course of employment. This can usually be decided by consulting ASA STANDARD CODE Z16.1-1945. If there is any doubt as to interpretation of the Code, the Committee of Judges of the American Standards Association's Sectional Committee is available to review the facts.

A few cases are discussed here. It is hoped they will aid readers not only in determining the chargeability of accidents but also in planning preventive measures.

Changing Clothing

While bending over to take off his work pants, the employee felt pain all over his back and legs. He was assisted to his home by his fellow workers and was visited the next day by the plant physician, who advised that the pain was in the area of the left sacro region and prescribed rest. The employee returned to work six days later.

The employer did not believe the employee was violating any rules for safety, that the task he was performing was unfamiliar to him, or that the occurrence could have been prevented by anyone; it just happened.

Decision. This case should be included in the company's work injury rates.

Comment. If any employee is required to wear certain protective clothing because of his work, or if his work clothes become excessively soiled or dirty so that changing them is necessary, then it would seem that this activity could be classified as arising out of and in the course of employment. However, if he was merely changing them for personal reasons, his clothing not being exceptionally dirty or soiled, it would seem that the case should not be reportable.

In many instances, more consideration should be given to (1) Facilities for employees who must change or clean up after a work shift; (2) Sanitation problems and hazards entailed when showers or washing facilities are necessary; (3) Fire and sanitation problems where lockers are provided for storage of clothing and other articles; (4) Dermatitis, and other factors involved when clothing and cleaning of clothing are provided by the employer. Lower worker morale, as well as injuries, can result from insufficient consideration or control of these factors.

Salvage Operations

A large amount of obsolete equipment in one of the unattended stations was sold to a salvage company. The sale included their dismantling and removing the equipment. In negotiating with the salvage company for removal of this equipment, it was agreed that the owner company would furnish a "watcher" to observe the activity of the salvage men, so that they would not contact energized equipment.

In removing equipment, an oxyacetylene torch had been used to cut steel. While this operation was going on, men from nearby plants were assigned at various times to observe and watch the operations of the salvage men to see that the salvage men did not expose themselves to certain hazards and to see that they removed the equipment specified in the contract.

An accident occurred when an employee, who was assigned the duty of watching the salvage men, became bored with just standing around and asked permission of the salvage men to go out in the yard and use their torch to cut some of the steel they were salvaging. While he was operating the torch, it back-fired and caused an explosion that resulted in burns on both of his hands that required hospitalization for several weeks.

There was nothing in the regular job assignment of the injured employee which required him to use an oxyacetylene torch. He was rated as an electrician and worked with an electrical maintenance crew. He had never been trained in the use of this type of equipment and would normally not do any work which would require its use. He disregarded specific instructions and left the scene of his assignment which was merely to observe the operations.

Decision. This injury should not be included in the industrial injury rates on the basis that this employee took himself outside of his employment when he left his regular work area and used the oxyacetylene torch to amuse himself.

Comment. Although Paragraph 2.1.1 of the Code states: *In the course of employment shall include . . . together with voluntary work undertaken by them while on duty with the intention of benefiting their employer,* the facts in this case would not appear to fall within the interpretation given this paragraph.

This case illustrates another source of difficulty when independent contractors are operating on the premises. Not only is it essential to see that the operations of the independent contractor conform to the specific safety standards of the company, but it is also necessary to instruct workers that they should not interfere with nor attempt to aid such operations when it would take them outside the scope of their duties.

Corrective Shoes

An employee with more than 20 years' satisfactory service has

—To page 47

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SAFETY NEWS
FEBRUARY 1955

New Frontiers

THE SEA HAS ALWAYS presented a mystery and a challenge. It lured the restless Phoenicians and the Vikings, who, unfortunately, left no authentic records of their voyages.

The age of discovery, which began with Columbus and Magellan, came at a time when the languages of many countries were becoming stabilized and more people could read and write. Printing was beginning to preserve and circulate knowledge. Inquiring minds were indulging in scientific speculation. Ships, though leaving much to be desired in the way of safety and comfort, had become much more seaworthy.

Today there is hardly a square mile of navigable water that hasn't been visited by man. People set out on trips around the world with little thought of mishap, although most of them do take out extra accident insurance.

Ocean travel has become safer through developments in marine engineering, through radio which permits communication with the far corners of the globe, through meteorological service which warns ships against storms and icebergs, and through the splendid work of the Coast Guard.

Scurvy, one of the former menaces of the sea, has been overcome by faster transportation, improved diet and better methods of preserving vital foods.

But while man has learned much about the surface of the ocean his exploration has extended only a few fathoms down. Beyond that, the tremendous pressures are too much for men with their present equipment. But interest in the ocean depths is increasing.

In filming Jules Verne's adventure classic, *20,000 Leagues Under the Sea*, Disney capitalized on this interest. Captain Nemo and his fantastic submarine, the *Nautilus*, come to life in Technicolor on a wide screen. Inevitably, but unfortunately, the film leaves out much of the scientific and philosophical discussions of the book.

This month's leading article is a fascinating story of the problems involved in filming the picture on the ocean floor and how innumerable hazards were overcome. Success of the venture was made possible by painstaking research in the development of equipment and in training men for strange and perilous operations.

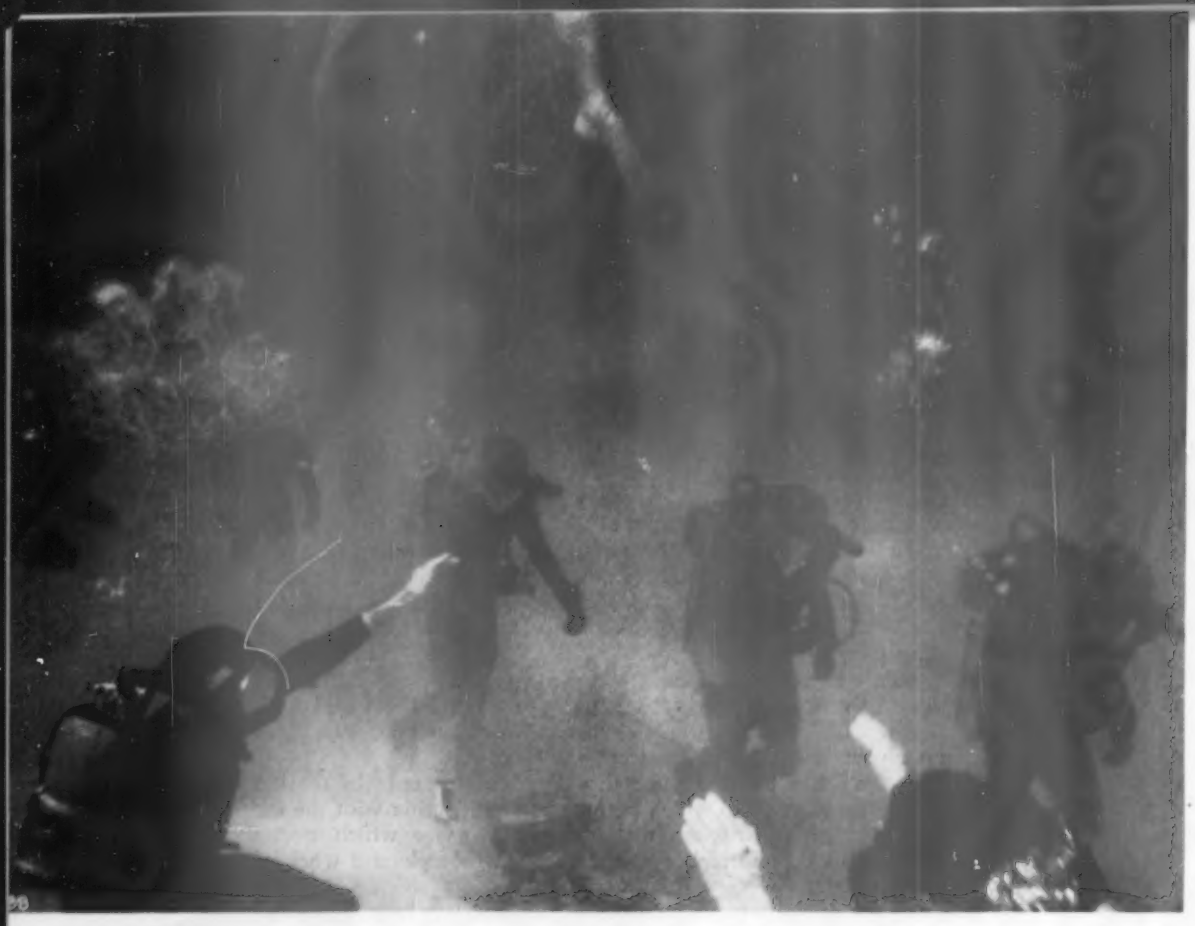
When Jules Verne wrote his delightfully extravagant tales 85 years ago, most readers dismissed them as merely entertaining flights of fancy. But scientific minds regarded them more thoughtfully. Undoubtedly, Verne did help to stimulate scientific research. At any rate, many of his dreams are now realities.

His *Trip to the Moon* hasn't yet materialized but interplanetary travel is being discussed—seriously. *Journey to the Center of the Earth* seems less probable—and much less inviting.

In view of current interest in the ocean as a potential source of food for the world's expanding population, the descriptions of the menus aboard the *Nautilus* are quite timely. Potential treasures of the sea are not limited to the gold and gems on sunken ships.

Man may yet find a way of penetrating the depths and extracting its riches. But for the present, Verne's quotation from Ecclesiastes still holds good:

That which is far off and exceeding deep, who shall find it out?



Jules Verne Wasn't Dreaming

Problems of production and risks to the crew were great but Disney technicians overcame them to bring a scientific thriller to the screen

The novels of Jules Verne are dreams come true—dreams of submarines, airplanes, television; they look forward not backward.—ENCYCLOPAEDIA BRITANNICA.

DID JULES VERNE have prophetic foresight, or did he merely let his imagination run wild in the scientific romances which delighted the youth (and many adults) of earlier generations?

Some of his fantastic stories are commonplace today. *Round the World in Eighty Days* was exceeded in real life long before the days of trans-oceanic flights. And his other famous adventure classic, *20,000 Leagues Under the Sea* has come to life in CinemaScope and Technicolor. But few of those who see it currently on the screen can appreciate the problems involved in its production—particularly in photographing the weird scenes under water.

Manufacturing thrills for movie audiences is a hazardous business but this latest Walt Disney production introduced some exceeding anything previously encountered in the industry. Making Jules Verne's dream of 1869 come true brought many new problems and risks to be solved by Disney and Director Richard Fleischer.

The famous novelist had described the crew of Captain Nemo's incredible submarine, the *Nautilus*, walking on the floor of the ocean in diving suits that had no air hoses. Many scientific advances had been made in the 85 years since the story was published, but no one had figured a way of achieving the result. Fleischer and his diving expert, Fred Zendar, had to face that problem at the start.

Zendar, a native of the town of Chamonix in the French Alps, knows the ocean floor like most people know the streets of their home town and had supervised more than a score of seafaring sagas. For *20,000 Leagues Under the Sea* he had to engineer a revolutionary diving rig, hire and train

Crewmen from the submarine "Nautilus" parade past the camera while technicians and assistants supervise underwater location shooting off the Bahama Islands of Walt Disney's CinemaScope-Technicolor production, "20,000 Leagues Under the Sea." (Photos copyright Walt Disney Productions)

Director Richard Fleischer (right, in black) takes lessons in underwater hand signals with the rest of the crew before going below.

24 divers to use the gear and help Fleischer in staging scenes of unprecedented scope as much as 40 feet below the surface of the Caribbean.

"Swimming scenes with a few people—a cinch," comments Fleischer. "Man fights shark—difficult but possible. What we hoped to do was to stage scenes under water, with as many as 20 actors in front of the CinemaScope lens, with the same care and precision as on a dry sound stage."

"There are only two ways of going under water for any length of time," says Zendar. "You can use the conventional diving suit, with helmet and air hoses. Or you can use the aqua lung where the diver carries compressed air tanks on his back and breathes through a tube in his mouth. In this case, you use a small face mask in place of the awkward and heavy helmet, which is impractical with the tube device."

For months Zendar struggled to duplicate Verne's description. Finally, with the aid of production designer Harper Goff, he devised a suit that combines the best features of both. The divers carried aqua lungs on their backs but the air, instead of going directly into their mouths, was piped via an ingenious arrangement of tubes and hoses into the helmet and then into an aqua lung fitting in their mouths. Each outfit had to be hand-tooled; there was no way of mass-producing such radical rigs.

Then came the crucial moment. On paper, the suit should work. But would it?

Zendar took several outfits to Catalina and there made a series of test dives, descending as deep as 60 feet. After a few minor adjustments, the seal of approval was placed on the suits.

There still remained innumerable details of organization and training for the difficult and hazardous operations ahead. A series of 16 hand signals was developed so that the director, cameraman and divers could communicate with each other. A water safety system had to be perfected to protect everyone who was "working wet," and half a dozen emergency measures devised to insure the safety of the men in the special suits.

In the majority of the scenes there are 41 men in the water

Using the Aquaflex camera, specially designed for taking pictures under water, a photographer shoots exciting sequences on the ocean floor.

On a platform anchored to the ocean floor, specially trained underwater photographers shoot an exciting sequence for the production based on Jules Verne's adventure classic.

simultaneously. Fourteen of them portray the crew of the *Nautilus* and wear specially constructed diving suits which are more bulky and cumbersome than the standard helmeted suits used by the Navy. The director, camera men, prop men and the grips all operated in the water with aqua lungs, which means they carried compressed air in special tanks on their backs and inhaled it through special tubes in their mouths.

The hazards of underwater work are numerous and some of them quite spectacular. There are the natural enemies: sharks, barracuda, octopi, sting rays and manta rays. The giant squid, which contributed one of the most exciting scenes of the film, fortunately, is not likely to be encountered.

But the mechanical hazards are the most serious. The jagged edges of the coral reefs might cut an air hose, rip a hole in a suit, or cut hands, legs and heads severely. Air hoses may clog, or the supply of air might be exhausted while a man is at an extreme depth. Divers may rise too quickly and suffer the "bends"—excruciating pains from sudden changes in pressure.

With these and other possible threats to life and limb in mind, it it no wonder the men who go below the surface are worried. But even more concerned are the few who must sit and wait for their return aboard the LCT which has been converted into a floating camera barge. These 12 men are those who refill the empty compressed air cylinders, the equipment repair specialists, and the experienced divers' handlers who watch the air gauges, and who can skillfully and swiftly unbutton and unhook a returned man.

And there is the doctor who hopes, like all good medical men, that his science and knowledge won't be needed.

Although there is plenty of room aboard the 120-foot vessel, the waiters crowd about the last few feet of space near the ladder used to descend to the sound stage. There is little conversation. The men stare at, but hardly see, the wonderful blues and greens of the water.

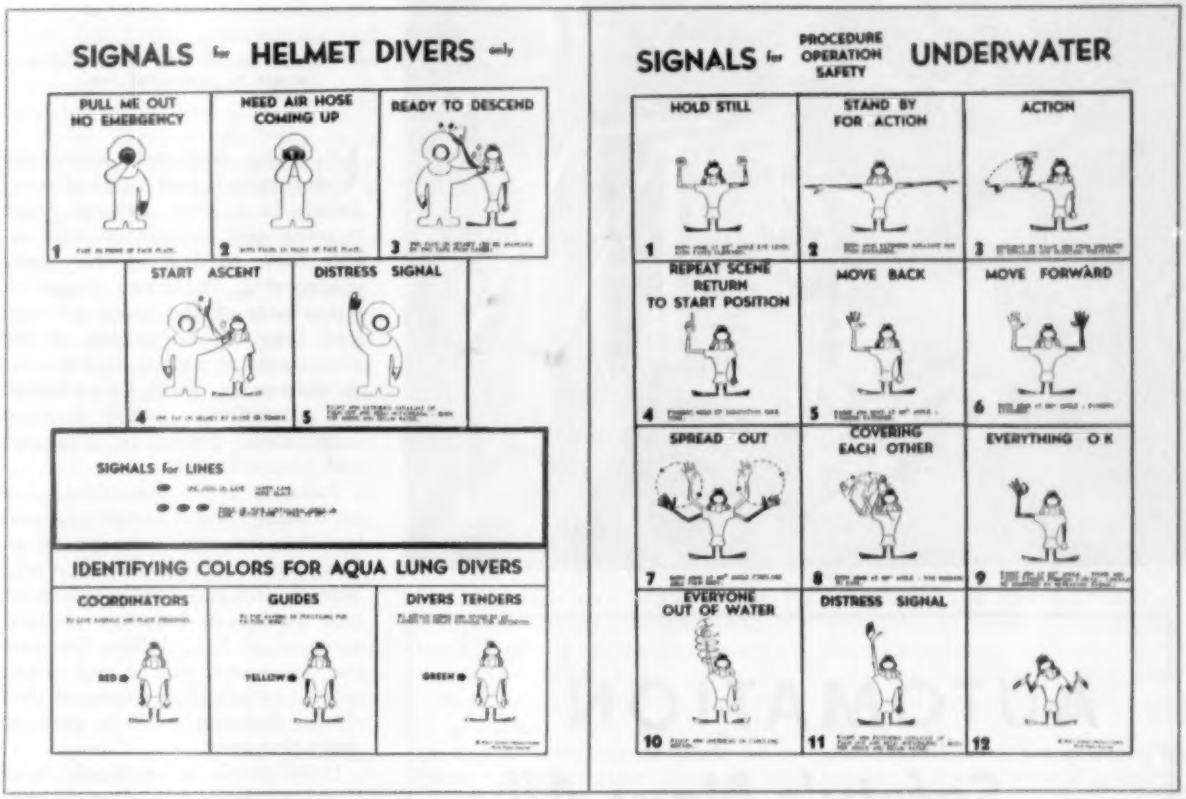
Every few minutes they glance at the timer clock to check the number of minutes the men have been down, for 52 minutes is the maximum time. It is the same feeling of helpless waiting experienced by bomber crews in war time as they kill time waiting for the crews to come home. As the clock ticks away into the 30's, the tension mounts and becomes almost tangible.

Finally, a water safety man breaks through the surface of the water and gives the signal.

"Divers coming up!" The shout is on every one's lips. Ropes are lowered into the water to help the tired men make their way back on board. The handlers check, for the twentieth time, their special tools needed to unfasten face plates, unbuckle chest plates. Then in a few minutes the water workers clomp on deck, their lead-weighted boots making a happy clanging sound.

All-male groups, like this, are never overly sentimental. Their jokes are rough—almost brutal. The shipboard crew is termed "the doleful dozen," or "the widow's and orphans' society." They, in turn call the divers "shark bait" and "salt water hams." There is an undue amount of back slapping and the feeblest joke evokes hearty laughter.

Few of these men will receive screen credit for their work. They will go unrecognized by the film fans who are thrilled by the eerie underwater scenes. Yet they feel



Success of the whole project, as well as safety of personnel, depended on these underwater signals. All members of the crew were thoroughly trained.

that their rewards are considerable. They know the satisfaction of a dangerous job done safely, and the cameraderie developed when a perilous situation has been conquered.

Zendar, whose know-how contributed so much to the success of *20,000 Leagues Under the Sea*, has had a colorful career. After working his way around the world as a sailor, including a brief shore stint as a newsreel photographer in China, he arrived in California in 1934 and learned the diving trade in San Pedro. He worked with fishing vessels and salvage operations, saving enough money to buy equipment of his own.

A scene on the ocean floor is photographed 30 feet below the surface on location off the Bahama Islands. The lives of the crew and the success of the picture depend on their equipment and training in its use.

In the summer of 1941 he received a call from Paramount Studios — who wanted to rent some diving gear. This brought him in touch with Cecil B. De Mille who hired him as technical director for the picture, *Reap the Wild Wind.*

World War II interrupted Zendar's movie career. He served five years in the Navy, emerging as a master diver and warrant officer. During his service career he worked on two of the Navy's biggest underwater operations, raising the luxury liner *Normandie* which had sunk in New York

—To page 112

Different types of stairways providing access to automated line.

AUTOMATION
Safety's New Ally

By JOHN B. STIRLING

Automatic processes won't solve all problems but they'll be a big help to the safety man

IF safety engineers know the mechanical and operational details in a given process, their training and experience will enable them to develop the safety engineering features required. Knowledge of the process would lead them to recognition of the advantages as well as the hazards. Subsequently, their knowledge and experience would develop appropriate protective measures and improvements.

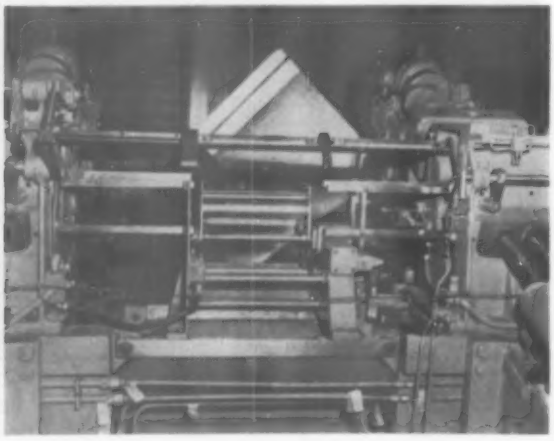
Industry is in the midst of a continuing plant expansion and facilities improvement program. The program started during World War II and has continued. Last year American industry pledged a record of $28.5 billion for new and improved plants and other capital outlay. It is expected that almost that much will be pledged again this year.

Immediately after World War II the emphasis was often on production without regard for long-term modernization of plant and production processes. Since then, however, there has been time to

JOHN B. STIRLING is Supervisor of Training, Engine and Foundry Division, Ford Motor Company, Berea, Ohio. This article has been condensed from a paper presented at the Metals Section, 42nd National Safety Congress.

A straight section of automation displaying a different type of fingers and contact switches which relay impulses to panels.

Automation including two straight sections and one re-positioning section. Note one type of fingers on transfer bar.



plan for many facilities which are new from the ground up and which utilize the latest known devices for producing at lower cost and higher quality.

Some of these facilities have been widely publicized and many people have the impression that a large number of automotive factories are now completely automatic.

This is not the case; the completely automatic factory is still some distance in the future. However, the expansion program of Ford certainly is proof that we believe the future will see new plants with greater percentage of automatic operations as manufacturing engineers and builders of machinery and equipment take advantage of the experience gained in the latest programs.

Other companies and industries, not to overlook magazine publishers, also seem to foresee the development of automation for the future. Interest is very high. It is highly probable that you will be exposed to it if you have not been already.

In Ford, as it probably would be in other companies, the extent of automatic handling (or automation as we prefer to call it) is largely determined on the basis of engineering studies based upon our experience and the experience of the machinery industry in general. These, coupled with an economic analysis, determine how far it is practical to extend automatic handling operations.

Basic Definitions

In our discussion of automation as it is related to the safety engineer, there are two main subjects which should be defined to some extent in order that a clear understanding of the problems involved may be obtained.

First: Transfer type machinery built with automation in mind. The transfer type machine combines similar operations to be performed on a part into one continuous machine with automatic indexing between work stations.

Second: "Automation," which is a coined word, meaning the automatic handling of parts between progressive production processes. It is a separate and distinct phase of manufacturing engineering which coordinates the efforts of various departments in our plants, and the machinery can become, in effect, one large transfer type machine with facilities to handle the parts as well as the scrap generated.

To illustrate the techniques used in the use of the transfer type machinery, we can consider the production of automotive crankshafts. One portion of our machining process involved drilling six oil holes, six metering holes, six lightening holes, and an inspection of the operation.

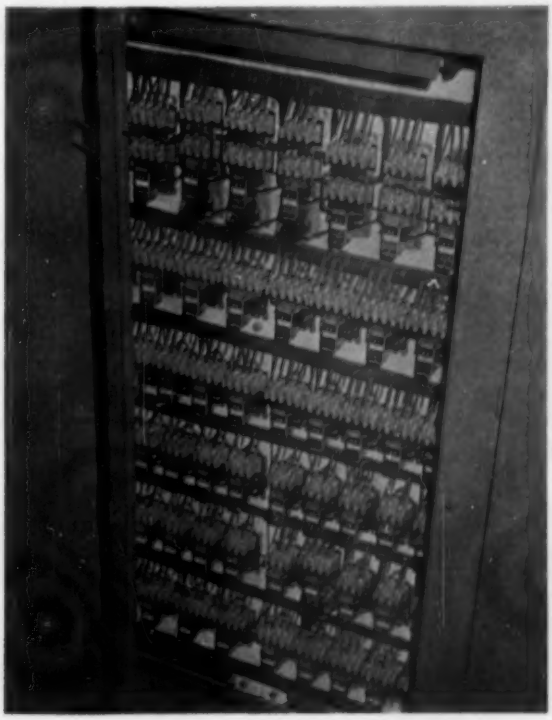
Ten or twelve years ago, 29 separate machines would have been required, while today the same department would require only three transfer type machines of eight stations each. The part would be loaded at one end and unloaded at the other end with all operations in between being completely automatic.

I'd like to try to draw a word picture of what automation is and how it works.

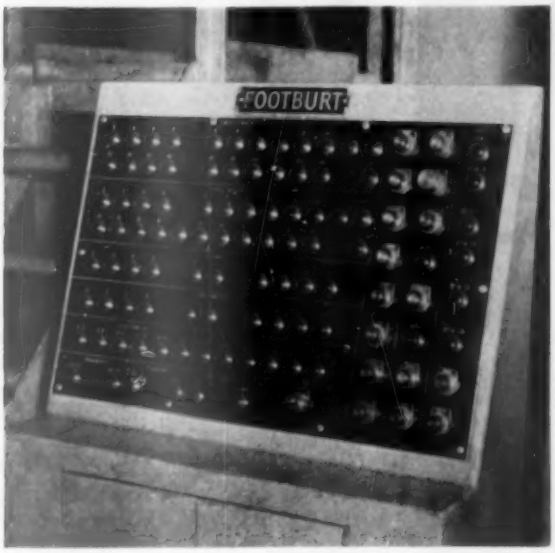
Automation, as we refer to it, applies to the automatic handling of parts between operations. Auto-

—*To page 80*

A typical electrical panel for automated equipment—one of a series of panels.



A console indicating positions of automated equipment.



A typical coal-mine accident prevention class. To hold the attention and respect of these experienced miners, the instructor must know his subject. (Photos by U. S. Bureau of Mines)

SAFETY TRAINING—100 per cent

By J. B. YANITY

When management and the UMW join with the Bureau of Mines in getting all officials and miners trained in safety, the accident rates go down.

SECURING 100 per cent attendance in safety classes is difficult, but with help from the union, company, and State agencies, it has been done in a large number of instances. Within the past 5½ years, the Bureau of Mines has issued 100 per cent attendance certificates to more than 170 mines where classes were held.

Accident-prevention courses for coal miners and officials were formulated by the United States Bureau of Mines about 18 years ago. These courses have the complete support of top officials of the United Mine Workers of America, State agencies, and most of the coal companies. In some districts, the training has not been success-

J. B. YANITY is Coal Mine Inspector, Bureau of Mines, Pittsburgh, Pa.

ful, because of either poorly trained instructors or failure to gain necessary cooperation.

To date about 106,000 men have completed the accident prevention course for miners, and approximately 28,000 men the course for officials.

Records of mines where both miners and officials have completed the training show a remarkable reduction in the number of accidents. One of the first mines to complete 100 per cent training reduced the frequency rate from 167.0 to 5.6 in a few years.

It is possible to train 100 per cent of the employees at mines if capable instructors are available. Miners and officials are not easily fooled; they are able to ascertain the extent of an instructor's knowledge of mining and safety work and his sincerity and belief in the subject. If an instructor can obtain the attendance of the men in the first, second and third classes, he should be successful in achieving 100 per cent training, with the usual good results.

When a program has failed, it may have been the fault of the instructor for the following reasons:

1. He may have failed to make proper preparations before starting the training, that is, failed to contact employees to find out if they were in favor of taking the training and, if they were not, to convince them of the need.

2. He may have failed to properly "sell" the need of the training to the company.

3. He may have failed to hold the trainees' interest in the classes.

If an instructor makes the training interesting, employees attending will tell the others, and this will prove an excellent means of enrolling those who failed to start with the first group.

This manual is given to each student completing the accident-prevention course.

Certificate and pocket card given to each student at the completion of the course.

The United States of America
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
100 PERCENT
Springdale Mine, U.M.W. of A., New Kensington, Pennsylvania,
COAL MINE ACCIDENT PREVENTION FOR MINERS

This certificate is given to a local union when 100 per cent of its members complete the course.

Organizing Classes

The instructor should organize and arrange his own classes. If he cannot organize and arrange the classes, that should be sufficient evidence that he will not be a successful instructor.

One of the requisites of a successful instructor is ability to "sell" the program and convince top management and local union officials that the training is essential if accidents are to be reduced. Cooperation of company and local union officials is a *must*. This cooperation can be obtained during the preliminary meeting if the proper approach is made. In some areas the district representatives of the United Mine Workers of America are helping to organize the classes. In at least one instance, the entire staff of the UMW district office completed the course.

The Accident-Prevention Course for Miners was approved by the UMW at the Cincinnati Convention in 1952, and it is supported by John L. Lewis, international president, and Charles Ferguson, safety director.

—*To page 74*

Audiometric testing station at Burbank, Calif., plant of Lockheed Aircraft Corp. It consists of two sound-treated testing rooms, a central reception and file office and chief audiometrist's private office.

Hearing Is Worth Saving

By LOUISE E. DAVIDSON, R.N.

An effective conservation program costs money, but Lockheed's experience indicates its value to the company and to employees

IN 1943 the management of Lockheed Aircraft Corp. became convinced that a hearing conservation program was needed and initiated a pilot study. In 1948, the program was adopted as a standard medical and safety department function. The program at the California Division, we feel, has been effective and practical.

The safety department was given the responsibility for surveying the entire plant to determine noise levels and composition and to identify all so-called noisy areas and occupations. After considerable deliberation and study, the medical department decided to accept an over-all noise reading of 85 decibels as a comparatively safe exposure level.

The medical department also decided to institute an audiometric testing program which was to be limited to applicants and to employees assigned to jobs with pre-determined noise levels above 85 decibels. The testing program was eventually to cover some 45 per cent of our employees.

The safety department was assigned the task of developing, purchasing and distributing ear protectors with the cooperation of the medical department.

The program started with audiometric examinations of employees in certain noisy areas. Contrary to the fears of many, examination of these employees did not result in the filing of hearing claims against the company. This has also been the experience of many other companies initiating hearing programs.

MISS DAVIDSON is with the Medical Department of Lockheed Aircraft Corp., Burbank, Calif. This article has been condensed from a paper presented at the Occupational Nursing Section, 42nd National Safety Congress.

GIVE YOURSELF A "PLUG"
...and win the race against noise fatigue!
AT THE BEGINNING OF THE SHIFT WHEN HANDS ARE CLEAN..... obtain EAR PLUGS from your Supervisor, Safety Tool Crib or your nearest First Aid Station.
Boil and unseal as necessary during shift and throw away at end of day.
This simple procedure will protect your hearing and you will be less tired.
1
2
3

Posters stressing the use of ear protection devices are used freely in Lockheed's hearing conservation program. At the right are types of ear protectors available for employees engaged in noisy operations.

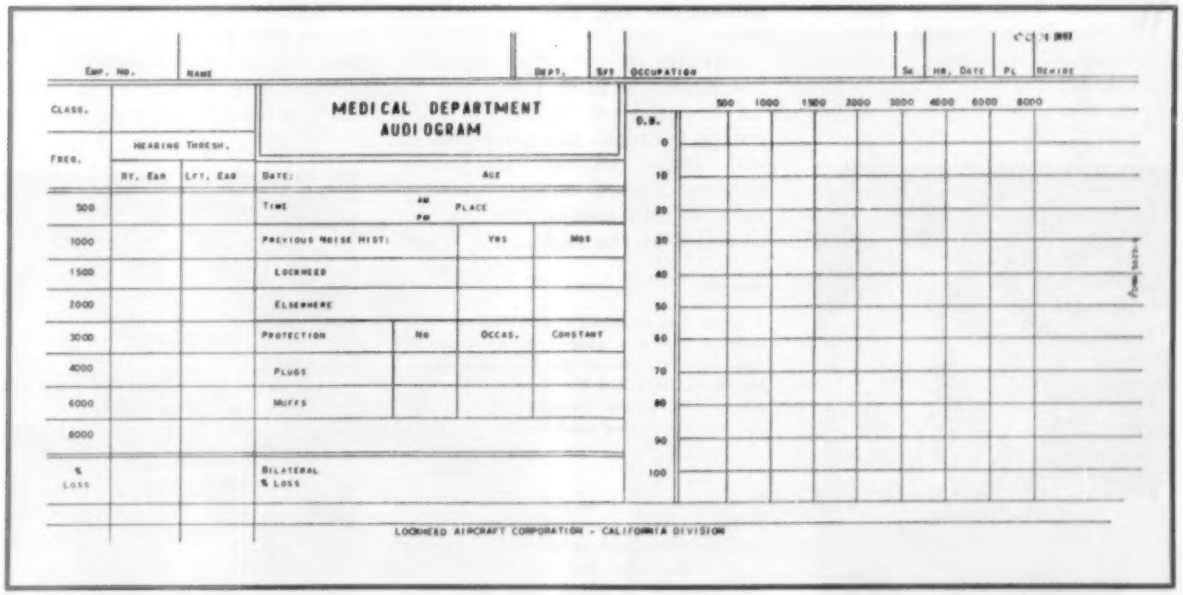
Through a gradual process of evolution and growing pains, the audiometric section established its identity, acquired adequate physical facilities and trained personnel, was placed under the supervision of a competent and interested physician, and given precise routine instructions and procedures to be followed in performing, interpreting and classifying audiometric tests.

Every applicant for employment is given a complete physical examination, including an otoscopic examination of the auditory apparatus, by an examining physician. All applicants for positions classified as noisy, as well as all others who present a history or physical evidence of auditory disease, are referred to the audiometric testing section. This is located in a building immediately adjacent to the main examining section, and, as shown in an accompanying illustration, consists of two sound-treated testing rooms, a central reception and file office, and the chief audiometrist's private office. During an actual test, the door of each testing room is, of course, closed.

The applicant is received by a nurse-audiometrist, who then ini-

—*To page 88*

The medical department audiogram provides a record of the employee's hearing ability.



All in the Night's Work

Life, property and jobs may depend on the vigilance of the plant protection crew. Here's a typical night at IBM

WHEN THE second shift at the Poughkeepsie plant of International Business Machines goes home for what's left of the night, the busiest hours are beginning for the plant protection force.

Precautions of the daylight hours must be intensified.

Credentials of those who approach the plant gate are checked and those without legitimate business turned back. Acres of yard, factory and warehouse are patrolled by the night force, alert for signs of fire and other menaces to life and property. Employees' jobs depend on their vigilance.

Whenever a shift quits work, there is hazard and congestion as

A precaution observed when an officer turns over his post and weapon to his successor. John Conklin receives gun and ammunition separately from R. B. Sarr, holding the weapon so that cylinder cannot swing back into firing position.

Climbing is part of the plant protection job. E. D. Poplawski swings briskly up a steel ladder to check such complicated machinery as power generators and other equipment on the mezzanine to check their functioning.

The lonely vigil of Plant Protection Officer John Carbury carries him through section after section of IBM's Poughkeepsie plant in the early morning hours. He must be always on the alert for irregularities. (Illustrations courtesy "Business Machines.")

After the second shift goes home, the plant protection force takes over. V. A. Donovan beams a flashlight into a warehouse as he opens the door to make a closer inspection.

cars leave the company parking lot and worm their way into the stream of traffic on the highway. At those times everybody is, understandably, in a hurry to get home, and the hazard is particularly acute during the early morning hours.

To safeguard employees on the first lap of the trip home a traffic light wired to manual-control equipment has been installed at the intersection of the plant road and the main highway. Operation of this light to safeguard IBM employees on the first leg of the trip home is one of the duties of the plant protection force.

In 30 minutes the last of the second-shift cars has left the plant and the officer moves on to other duties.

The warehouse system at Poughkeepsie covers a wide area, all kept under regular night surveillance. Before the patrolling officer finishes his eight-hour duty he has added some 60 miles to the car's speedometer, checking the many dispersed buildings.

As he progresses from stop to stop, a call to headquarters confirms that all's well with the IBM property that stretches beyond the factory gates. And while the

—*To page 107*

On the nightly patrol of the buildings, Emmanuel B. Lake clocks in at one of the many points. Fire extinguishers are checked frequently by officers on their rounds.

A message from the Plant Communication Center is delivered by John Travis to a patrol car miles away as its driver checks the many IBM warehouses in the Poughkeepsie area.

(Fiction)

He came with a glowing letter of recommendation, but . . .

The New Man

By BILL ANDREWS

February 13, 1955

I GUESS I've been lucky.

With one exception, every assistant I've had at Jackson-Barnes has been at least competent, and three have been very able men indeed. The one exception was a fool—but he had been saddled on me by the front office, so his failure was not to my discredit.

Now it appears that my luck has finally run out.

As a sort of bonus for our achieving our all-time best year in safety in 1954, Larson let me add a junior safety engineer in January.

I screened about 15 names sent by employment agencies, the National Safety Council, and a couple of good friends. I interviewed four men. One of these wasn't interested in a third-place spot under both me and Harry Dexter.

Joe Hastings was referred to me by NSC's personnel service. Engineering grad, reserve officer, his post-college stretch of active service just behind him. Single, slightly above average academic record, quiet, shy, courteous—even a little on the formal side. He wanted the job badly, and seemed to be pressing during the interview.

Louis Guthrie is only 22, but according to the record sent by the employment agency, he has 18 months of very successful safety work behind him. An apprentice carpenter, he had been noticed by the front office of a big contracting firm when he submitted two excellent suggestions on safety matters in a company-wide contest. They took him into the safety department and used him on some of their smaller jobs. A good conversationalist, cheerful, rough cut, a little cocky, he seemed to me. No engineering background. His mind seemed quick—but his ideas weren't always soundly based, I thought.

The third man—let's call him Smith—came with a glowing recommendation from a friend of mine who is himself an old-time safety engineer for an oil company. Smith has a liberal arts degree, but with a good many technical subjects in his record. Superior student. He was assistant to my friend for six months, working in the Williston Basin. But the North Dakota winter threatened his none too robust health—that, at least, is his story—and he resigned to seek indoor work in a milder climate.

According to my friend, he performed his duties perfectly satisfactorily, and the letter of recommendation ended, "Mr. Smith has, in my judgment, shown real promise in safety work, and I sincerely believe that he will be an asset to a corporation staff. I think this young man will go far."

In my interview with Smith, I found him neither over-talkative nor over-quiet. He was quite respectful, had a good appearance, and seemed eager to work and learn.

So, on the balance of all factors, I picked Smith.

The first week, I didn't give him much work. Mostly I briefed him, showed him the plant, had him read the files to get familiar with our program and practices. The few inspection reports I had him make were adequate.

The second week I had occasion to cover a department an hour after he had made an inspection. He had spotted a couple of minor housekeeping failures, but gave the department as a whole a "good" rating. I spotted a machine operating with a guard removed, a gal without head covering, and a collection of oily rags in a wooden box.

I talked very sternly to Smith, and he was properly humble.

"I guess I've been around the oil fields so long, where things can't be kept in apple-pie order, that a shop like this looks good to me," he said. "I'm glad you called me on it. A guy kind of has to learn what standards are expected."

That was a half-way reasonable answer—but it still didn't explain why he did report a small oil slick on the floor and skip the more gross and serious shortcomings. I told him that, and he said, "Thanks, boss. I'll really get on

—To page 104

Safety — Rain or Shine

The banners were subjected to rigid tests under all kinds of wind and weather conditions. The exhaustive indoor and outdoor tests were held over a period of eight months.

WHAT'S the best way to determine just how a product will perform? By testing it, of course.

And the colorful banners which grace our cover this month have certainly been through the testing mill. For more than eight months, early models of these king-size safety signs were exposed to Chicago's weather, in two locations—at a Chicago industrial plant, and on the roof of the National Safety Council's 14-story headquarters. The banners were subjected to wind, rain, sun, snow, and every temperature extreme. The purpose of this was to see which types of cloth and drill, inks and paints would stand up under the elements for a minimum of 30 days.

Every two weeks, members of the Council's poster committee checked the banners for appreciable deterioration of material and fading of colors. As different cloths, inks or paints showed a weakness, they were discarded. Banners were mounted at all points of the compass, to make sure they would get the maximum punishment.

Considerations such as size of wind vents, strength of stitching, and quality of rope became important.

Indoor banners were also tested over the same period of time—and under controlled indoor conditions presented little trouble.

The poster committee combined suggestions from plant safety personnel with some ideas of their own, and came up with a one-year program of the "Showmanship for Safety" banners. They are designed with an eye for durability, subject, attractive design, color-appeal, and general messages pointed directly to every reader.

A miniature illustration of the first month's—April—banner may be found on page 98.

Disasters Take Fewer Lives in 1954

CATASTROPHES — accidents in which five or more persons are killed—were responsible last year for the loss of more than 1,200 lives in the United States, one third less than the year before and the smallest number in five years, statisticians of the Metropolitan Life Insurance Company report.

Hurricanes "Carol" and "Hazel" accounted for two of the major catastrophes of the year. "Carol" struck Long Island, New York, and New England on August 31, killing 68 persons. "Hazel" cut through the Atlantic Coast and New England states on October 15, causing about 100 fatalities—the worst single disaster of the year.

"Not since 1938 have such storms claimed so many victims in a single year," the statisticians note. "On the other hand, tornadoes, which killed about 475 persons in 1953, took comparatively few lives in 1954."

The two other major disasters of the year were the August 28 crash of a military plane at Rapid City, Iowa, with a death list of 26, and the international scheduled passenger plane crash at Idlewild Airport, New York, on December 18 which also killed 26 persons.

These four major catastrophes took at least 220 lives.

Using the high-line hazard demonstrator, John F. Phelan explains the inherent dangers of the work to a group of firemen.

If a live wire falls across an automobile, don't touch it. Here the line is in contact with the car's radio antenna, charging the auto body. As long as the occupants stay inside they'll be safe until help arrives. The car is insulated by its rubber tires.

High-Line Hazards On a Table Top

By JOHN F. PHELAN

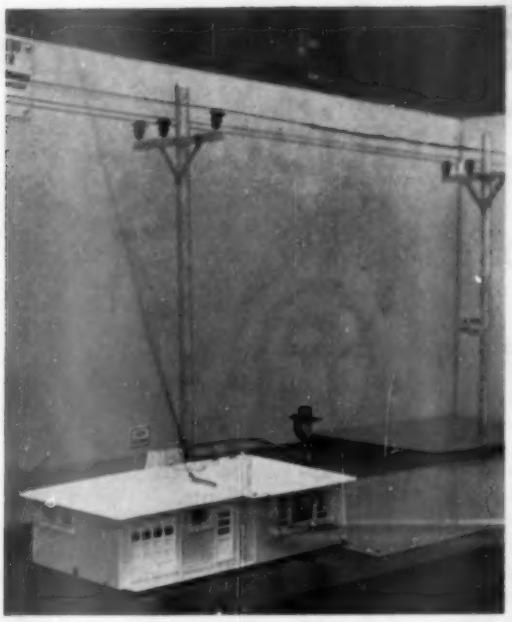
A SWITCHYARD operator in an electric generating station has more actual power than the superintendent of that plant—a wrong decision or move on his part can shut the plant down and interrupt power to a large area.

How can we give new operators the training and operating knowledge of the ten or twenty year veteran? At the Indiana & Michigan Electric Company we have answered this problem in part by turning to visual aids such as the "high line hazard demonstrator."

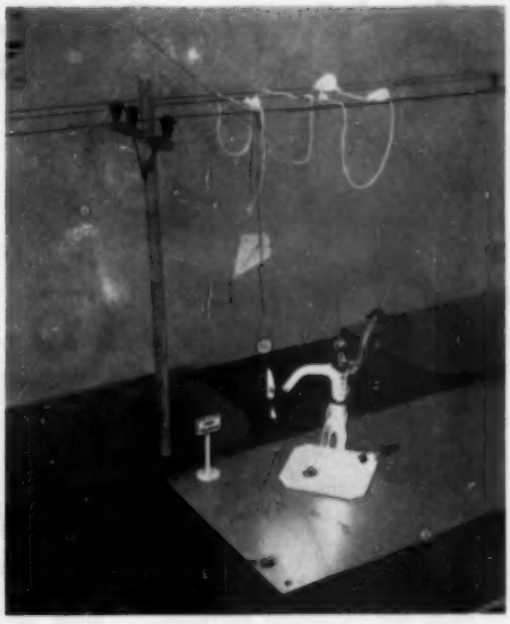
This is a half-inch-to-the-foot scale model of a substation, and a section of a transmission line. The model is actually energized at 15,000v with 30 milliamperes of current—enough that when it is short circuited we can pull a three-inch arc. Two operators with interlocking controls are required, all actual manipulation is done by "hot stick."

While the Demonstrator was under construction at the twin branch plant loader dispatcher's office, it was seen by visiting groups and created so much interest that requests started to come in for shows before their regular meetings. Among the first to sense the importance of this type of instruction were police and fire officials, and shows have been conducted all over the middle west for these two services. In one dramatic instance a lesson learned on the demonstrator in the morning saved a fireman's life before noon! —*To page 109*

JOHN F. PHELAN is Chief Load Dispatcher, South Bend Division, Indiana & Michigan Electric Company, South Bend, Ind.



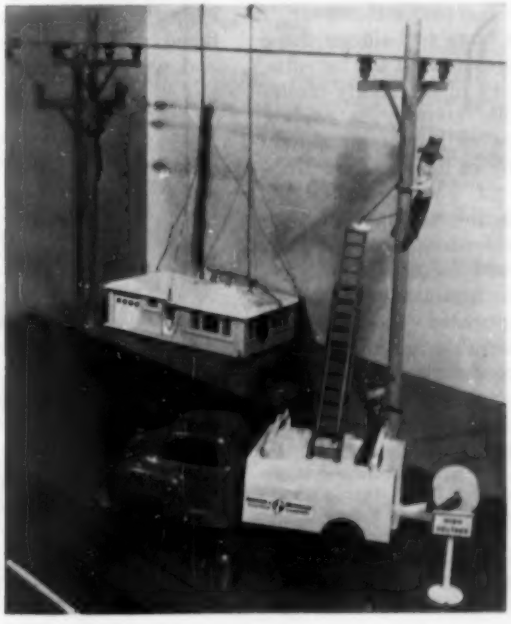
TV antennas falling into high lines have caused many accidents and a few deaths. Even people inside the house may be injured. The demonstration urges home owners to erect antennas so that they will not fall into high lines if they should fall or be blown over.



The danger of flying kites with fine wire, metallic string or wet string is shown here. The neon glass figure, representing a kite-flying youngster, glows when the kite with metallic string gets into a high line.

A sputtering arc is made by a worker touching a power shovel in contact with a high line. Anyone touching the cab may be electrocuted. The operator may be protected by cab insulation and not know the boom is touching the line.

This close up shows some of the models used in the Indiana and Michigan Electric Company's high-line hazard demonstrator which portrays the hazards connected with high lines.



Is Your Suggestion Program Safety Conscious?

By ARTHUR D. MURPHY

Nobody knows the hazards like the man on the job. Are you getting the benefit of his ideas?

THOSE of you who are safety engineers may resent some suggestions made for the correction of hazards of which you were aware for a long time. In fact, you may have tried several times to have the condition corrected.

You also may believe that your suggestion committee will have to spend much time on suggestions to correct hazards which should have been eliminated by the safety department. And you may find yourselves hard pressed by operating people to justify the adoption of some minor safety suggestions.

In other words, suggestion system administration is not made easy because of safety suggestions. On the contrary, your headaches will increase. However, I believe we have to balance these disadvantages against the benefits.

The history of the safety movement in this country is replete with stories of how man slowly solved many of his accident problems, and of how his thoughts centered on the need for prevention of accidents and elimination of hazardous conditions.

When the first safety programs were inaugurated, industry had such a deplorable record that any constructive measure would have produced results. The first approach was directed and rightly so, at the mechanical causes of accidents. The installation of safeguards on machinery, ventilating systems, proper maintenance of plant and equipment, and good housekeeping practices were at first assumed to answer our problem of accident prevention. These programs did result in a considerable reduction in the number of accidents. There is no question that by engineering operation-safety into the industrial plant a great measure of accident prevention was accomplished.

However, it has dawned upon us that the installation of safety guards and protective devices has come close to the point of diminishing return. We are constantly faced with new safety problems, and we are trying to devise still new methods for eliminating accidents.

In considering that the first approach represents the engineering point of view as it is based upon the demonstrated relationship between safety and efficiency, we find now that the movement for industrial safety needs to push ahead in another direction—specifically in the direction of human engineering.

Within recent years, investigations have proved that the basic causative factor in accidents today still is that old critical and unchanging factor . . . *Human Failure!* Moreover, increasing use of mechanical energy and technology, the complexity of industrial processes, the use of radioactive materials, and the development of atomic power have multiplied opportunities to make mistakes.

How do we get the employee to think safety? Is it through . . .

1. Education?
2. Motivation?
3. Training?
4. Enforcement?

We have instituted job training and safety education for both supervision and employees in our plants. We also have introduced motivation devices, including posters, slogans, contests, soundslide and movie films and safety talks for foremen. Rules and regulations have been effected and enforced for keeping the workmen away from hazardous areas, for wearing protective devices like safety goggles, hard hats and safety shoes. There is no doubt

ARTHUR D. MURPHY is Director, Safety and Suggestion Plan, Crucible Steel Company of America, and Second Vice-Chairman, Western Pennsylvania Chapter, American Society of Safety Engineers. This has been condensed from an address at the 12th Annual Meeting, National Association of Suggestions Systems.

in our minds that every one of these has contributed to the improvement in our accident experience.

I am strongly convinced that safety is a way of thinking . . . a way of thinking which causes one to automatically close the cover on a packet of matches before striking; a way of thinking which causes one to reach out for the handrail when going up or down stairs; most certainly it is a way of thinking which keeps each of us within the confines of safe working practice, and which gives substance to the slogan we use so often . . . Safety Is Everybody's Business.

One of the most common failures is that of not thinking . . . of not thinking enough . . . not thinking quickly . . not thinking clearly. To get the workman to think intelligently, quickly and accurately on the job, we are developing to a new degree what we have found to be the most dynamic technique yet for stimulating creative and productive thought . . . the suggestion system!

Of all the techniques which we have employed so far, I believe the suggestion system is probably the most positive step in the direction of formulating and improving ways of thinking in relation to safety.

In my own company, the campaign for safety suggestions has paid off by stirring up interest and focusing individual attention on safety. We cite our safety record up to 1948, before the suggestion system was inaugurated in our plants. In 1948, our accident frequency rate was 8 employees injured for every million man-hours worked. Today, less than 1½ employees are injured for every million man-hours worked.

Our records show that during the five-year period since installation of our suggestion system, we have saved 552 of our employees from disabling injuries and 15 men are alive today who in all probability would be dead, if we had not stimulated safety consciousness in our plants.

Naturally, since many new programs were being placed in effect at the same time, and no particular one was measured for effect, we are not able to say conclusively which technique bore the most fruit in cutting our accident rate. However, we feel safe in assuming that the suggestion system may be credited with cutting a good slice off that rate, since we have several actual examples of suggestions which prevented disabling injuries, and one which saved a life.

We recognize, of course, that a certain percentage of accidents are bound to be due to chance factors. However, we know that attitude is not due to chance. Employees do not become safety conscious by chance or directive. We must produce some inducement whereby we activate employees' interest in their own safety. Employee cooperation is a basic factor, and so in developing our safety program to the fullest measure of cooperative protection for the worker, it is not only worthwhile, but essential that we appeal to him through his feelings such as:

—*To page 58*

Free Insurance

WHAT'S WITH THESE JOKERS who always have to pay through the nose for something or they think they're being had?

A guy will pay a lot of money for protection he may or may not need on the one hand, but will turn down *free protection* he may or may not need on the other.

For example, Sam has spent about $150 a year now for 10 years for auto insurance—to save his neck in case he clobbers someone. He hasn't had an auto accident in all this time and he may never have one.

But, do you think he'd go out driving in his car if his auto insurance had lapsed?

Joe has spent about $200 a year for the past 25 years for life insurance—and he ain't dead yet.

But, do you think he'd consider missing a premium or letting his policy lapse? Whattsa matter? You stupid, er something?

In the past 10 years Sam has been laid up four times for periods ranging from three days to three weeks because he wouldn't take simple precautions at work—some of that *free insurance* I mentioned.

He busted a toe once when something fell on his foot—and this laid him up a couple of weeks. But he won't avail himself of some of that *free insurance* by wearing safety shoes. He doesn't seem to appreciate anything if it's free.

He got a glob of something in his eye another time and had to make like a one-eyed coot for a few days. But, he's not interested in such *free insurance* as wearing eye protection. That's the simple way.

Joe's just as bad. He darn near lost a finger once because he didn't get first aid for a sliver—and got a bad infection. Almost got his arm yanked off another time on a lathe, when he didn't go for that *free insurance* of stopping it before clearing some chips.

Yes—neither one of these clowns has really been mangled in all his years—and maybe they never will be.

But, why be so inconsistent? You're insuring the same merchandise, whether for free or for a fee.

ROBERT D. GIDEL, *Senior Consulting Engineer, Industrial Department, National Safety Council*

The Radial Saw

Published by National Safety Council
425 North Michigan Ave., Chicago

1. The radial saw has found increasing popularity in recent years, due largely to the wide variety of purposes for which the equipment may be used.

The saw itself usually consists of a motor suspended by a yoke, which in turn slides on a horizontal arm or beam. Other saws have sliding arms with the motor attached to the arm. The saw is normally mounted on the motor shaft and usually revolves at approximately 3450 rpm.

Although the most common use of this type of saw is for cut-off or cross-cutting purposes, adjustments on the yoke of the saw make it possible to swing motor and blade through an arc of 180 degrees. By means of this adjustment, the saw head can be turned parallel to the table and used for ripping. Practically all such saws also have a means of tilting the head so that bevel cuts can be made.

By a combination of the two adjustments compound bevel and miter cuts can be made. With special attachments, the radial saw can be used for dadoing, drilling, rabbeting, shaping, grinding and buffing.

2. The principal sources of injury connected with the operation of the radial saw are also common to other power driven saw operations. They are:

a. The saw blade itself can cause severe cuts and amputations.

b. Wood or other material thrown from the revolving blade because of dull or improperly set saw, non-use of anti-kickback device when ripping, or improper feeding.

c. Materials handling causing foot and leg injuries due to lumber falling from feed table, usually due to use of an inadequate table or to poor practices of stacking material. Strains and hand injuries may occur when handling long or heavy pieces of lumber.

d. Poor maintenance or lack of grounding can cause electric shock.

e. Flying particles and sawdust can cause eye injuries.

f. Loose clothing and long sleeves worn by the operator may catch and draw him into the saw.

This Data Sheet is one of a series published by the National Safety Council, reflecting experience from many sources. Not every acceptable safety procedure in the field is necessarily included. This Data Sheet should not be confused with American Standard Safety codes, federal laws, insurance requirements, state laws, rules and regulations, or municipal ordinances. Reprints of these Data Sheets are available from National Safety Council.

Operating Personnel

3. As with most types of power saws, practically all injuries are the result of improper operation, installation or maintenance resulting either from lack of knowledge or ignoring the rules relating to operation and the manufacturer's recommendations on adjustment, inspection and maintenance.

The first requisite for safe operation, therefore, is a well-trained operator who understands proper methods of operation and the hazards involved in improper procedure or faulty arrangement and machine maintenance. Helpers engaged in taking material to or from the saw should thoroughly understand the job.

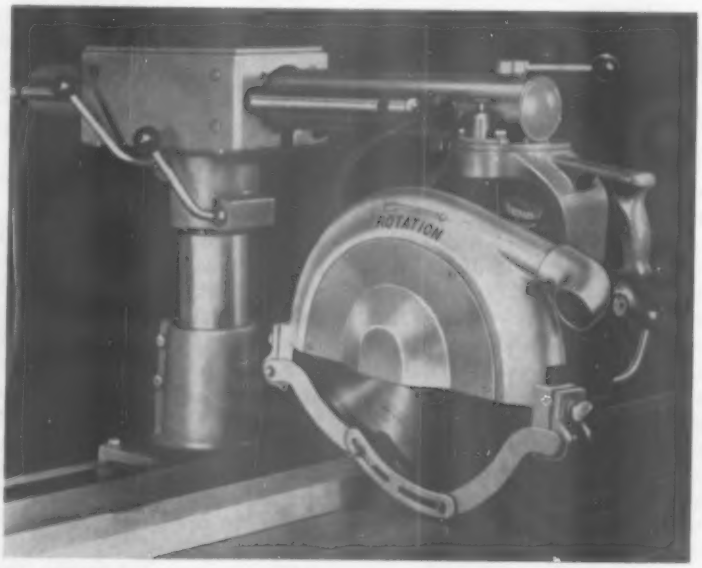


Figure 1. Typical radial saw guard used for crosscutting. Note that arbor is covered and lower portion of guard rises and falls adjusting to thickness of stock being cut, complying with ASA Woodworking Code. (Courtesy Skil Corp.)

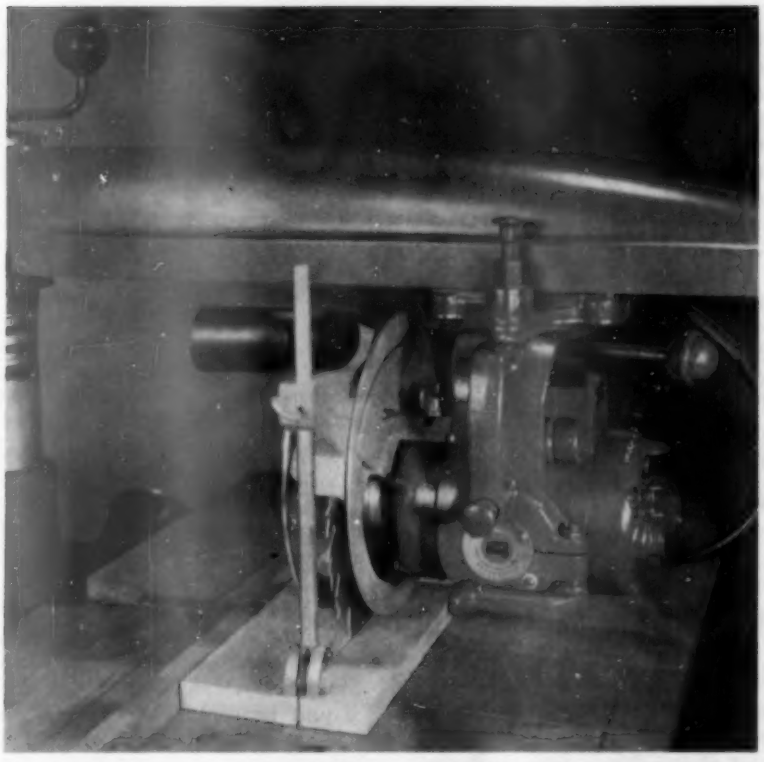


Figure 2. Radial saw set up for ripping to comply with ASA Woodworking Code. Note anti-kickback fingers and spreader. With this particular guard the circular rings rise and fall independently, keeping both in contact with the stock being cut regardless of how the cutting head may be positioned. (Courtesy De Walt, Inc.)

Installation of Equipment

4. The location for installation of the saw should be planned to provide smooth flow of the work with adequate room for stacking material as it travels to and from the saw. The pattern for movement of material should be such as to eliminate any need for passing lumber across the space in back of the operator.

5. Adequate space should be provided on all sides of the machine base for ease of access when cleaning or maintaining the machine and when removing saw dust.

6. It is good practice to have a saw table which extends outward toward the operator an inch or more beyond the extreme position of the saw when the yoke is at its maximum outward position.

7. If ripping is performed, the overall length of the saw table (both feed and receiving) should be at least twice the length of the longest pieces of lumber which will be sawed in normal operation. Recessed rollers are recommended in a table handling pieces of material of appreciable length or weight.

8. Some saws can be equipped with power feed devices for ripping and, when properly adjusted, such devices will eliminate much of the hazard and manual labor required in hand feeding of long pieces in quantity.

9. The arm or beam should be raised slightly at the front so the saw will not "creep" toward the operator.

10. The power supply should be checked and long power lines or additions to low voltage service circuits carrying other loads should be given special attention to assure that a voltage drop will not result in overheating electrical equipment.

Guarding the Equipment

11. All radial saws should be equipped with a hood type guard which adequately protects the upper half of the saw blade and the arbor end. This guard or hood should be capable of being rotated around the saw arbor or blade center so as to bring it down to a point just slightly above the stock to be cut. See Figure 1.

12. For crosscutting, a lower section for this guard which is so hinged to the upper portion of the guard, that it rises and falls, adjusting itself automatically to the thickness of the stock as the saw passes through it should always be used. This adjustable portion of the guard, if removed for special work, should be replaced immediately when such special work is completed. Note Figures 1 and 2.

13. Radial saws should never be used for ripping unless an anti-kickback device is used. Such a device should be effective for any thickness and width of stock to be cut. See Figure 2. The non-kickback fingers should be located on both sides of the saw. A spreader should always be used.

14. This type of equipment should be provided with a positive device to return the saw automatically to the back of the table when released at any point of its travel. It need be no more than a line, pulley and weight or a spring return, depending upon the length of travel of the yoke. The required pull should be as light as practicable to prevent undue tiring of the operator. A cushioning device and locking handle at the rear of the horizontal beam or arm is recommended to prevent rebound of the traveling yoke.

15. The saw should have a positive limit stop to prevent the saw from traveling beyond the edge of the table. Since this limits the width of the board that can be cut it may be necessary to

increase the width of the table so the saw can be operated safely the full distance of the arm.

SAFE OPERATING PRACTICES

Crosscutting

16. In practically all cases, saws of this type are pulled across the cutting area by means of a handle located to one side of the saw, rather than in line with the saw. The operator should stand to the side on which the handle is located, and pull the saw with the hand nearest the handle, handling the lumber with the other hand.

In this position he keeps his body out of line with the saw, at the same time making it unnecessary for him to bring his hands near the cutting zone of the blade.

17. Short pieces should never be picked off the table until the saw has been returned to its position at the rear of the table. A stick or brush should always be used to remove scrap.

18. Under normal circumstances measuring should be done by placing the boards to be cut against a stop gauge. However, in instances where it is necessary to measure with a rule, the lumber should be kept well away from the saw until measuring is completed.

Ripping

19. A radial saw is not the safest equipment to use for ripping and some firms prohibit its use for this type of sawing. When ripping, the saw head is rotated 90 degrees right or left, and clamped in position. The stock is then fed against the revolving blade from the side at which the blade rotates upward toward the operator.

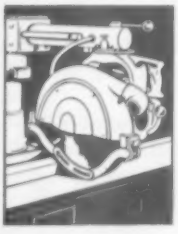
20. In ripping, the teeth of the saw should extend through the stock being cut, into the table slightly. Failure to observe this precaution gives the teeth a strong tendency to pick up material and throw it forcibly in the direction of the operator.

21. Failure to observe the rule with respect to proper direction of rotation for ripping can be disastrous. The saw should always rotate upward toward the operator. Rotation in the opposite direction, or feeding from the wrong side tends to grab the material away from the operator and throw it to the rear.

Two possibilities of severe injury arise from improper operation. The high speed of the saw makes it possible that the operator's hands will be drawn into the revolving saw. There is additional danger to the helper and other people on the other side of the saw created by the flying stock, which is thrown so forcibly that it has been known to drive the stock through a one inch board. There have been numerous injuries and some fatalities as a result of failure to observe this precaution.

22. A durable anti-kickback device should be used for ripping, not of the flimsy type sometimes used. The best anti-kickback device is an automatic roll feed, sufficiently powerful to prevent kickback of lumber being ripped.

THE RADIAL SAW



1. Before starting the saw make sure the guard is in place, especially the lower section.
2. Do not stand in line with saw; stand on side where handle is located and pull saw with hand nearest handle.
3. Wear goggles or face shield.
4. Wear close fitting clothing; no loose or long sleeves.
5. Be sure saw does not "creep"; beam or arm should be raised slightly at the front.
6. When cut is completed be sure saw is returned at once to rear position.
7. Shut equipment down when making adjustments or changes in setup.
8. Don't leave the saw unattended. Be sure the saw blade has stopped turning before leaving.
9. Use stick or brush to remove small pieces of scrap from saw table. Keep floor clear of scrap and debris to insure good footing.
10. When ripping be sure the saw blade rotates upward toward the operator and that properly adjusted anti-kickback fingers are used.
11. When making heavy cuts, angle cuts or miter cuts, fasten locking device securely to prevent saw from rushing toward you. Keep out of line of cut.

NSC Safety Instruction Card No. 718

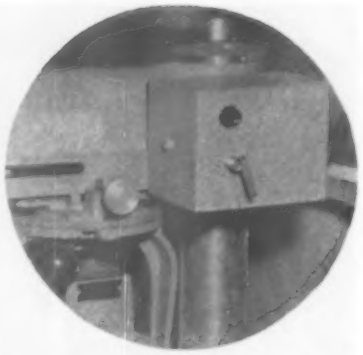


Figure 3. A safety power brake largely eliminates "drift time" after the motor has been shut off. (Courtesy De Walt, Inc.)

OTHER PRECAUTIONS

The Place of Work

23. Operation of this type of equipment requires considerable movement on the part of the operator. Floors should be in good condition, free of obstructions, and should provide a non-slip footing. The location of the saw should be such that there is no danger of the operator being bumped or struck by passing trucks or pedestrians. The entire saw area should be well illuminated. Access to the rear of the saw should be guarded to prevent contact with the blade while the saw is in the rear position.

Grounding of Non-Current Carrying Parts

24. Power to the motor is usually provided by means of a flexible rubber-covered cord or cable running from the starting and stopping switch to the motor itself. This cord or cable usually contains one more wire than is needed for current carrying purposes, and this extra wire is connected to the motor frame and grounded through the shell or frame of the starting switch. It is desirable to provide a three-pronged plug and corresponding female receptacle with a lead to a positive ground to insure that the apparatus is grounded when in use.

25. Failure to complete the ground usually results from poor installation. If the connections

—*To page 116*

Changes in ASA Standard Z16.1

ASA STANDARD Z16.1 has been revised. The date of the revision is December 16, 1954, and the revised standard is identified as Z16.1—1954. It will become effective January 1, 1955.

The title of the revised standard has been changed slightly to read *The American Standard Method of Recording and Measuring Work Injury Experience.*

It is not possible to point out here all of the changes that have been made in the standard, many of which are minor, or to explain the changes in full detail, but the *principal* ones are stated below.

Readers are urged to get copies of the complete standard from the American Standards Association, and acquaint themselves with the detailed provisions of it. The address of the American Standards Association is 70 E. 45th St., New York 17, N. Y.

The *principal* differences between the new standard Z16.1-1954 and the old standard Z16.1-1945 are:

1. The format has been changed. The new standard has a section on Definitions in which all of the principal terms used in the standard are defined.

It also has an appendix (not a part of the standard) which includes interpretations and guiding examples.

The remainder of the standard covers items that are similar to those in the old standard, but they are grouped somewhat differently into the following sections: Evaluation of Severity, Exposure, Measures of Injury Experience, and Classification of Special Cases.

2. Time charges for hand and foot injuries have been changed slightly. Each joint of each finger has a different charge, e.g., although the total charges for a hand or foot are unchanged. And the method of determining charges, especially in multiple amputations, has been greatly simplified.

3. Hernia classification and charges have been changed. If a hernia is *not* repaired (regardless of whether it can or cannot be repaired) it is classified as a permanent partial disability and carries a time charge of 50 days. If it *is* repaired, it is classified as a temporary total disability and only the actual calendar days lost are charged.

4. Back injuries are considered work injuries only if there is a clear record of an accident or incident, and if the doctor authorized to treat the case is satisfied that the injury could have arisen out of the accident or incident.

Back conditions which are revealed on the job but which do not result from nor are caused by an accident or incident are not considered work injuries.

5. Disabilities which arise SOLELY out of physical deficiencies are not considered work injuries, but an injury which arises out of and in the course of employment is considered a work injury even though the worker had a physical deficiency.

6. An injury is not considered a work injury if it results solely from an **external event** of such proportions and character as to be beyond the control of the employer, such as tornadoes, earthquakes, floods, explosions originating outside of employment, etc., or from an immediate secondary event such as a fire, boiler explosion, falling electric wire, etc. However, if the victim is a policeman, fireman, member of a disaster or emergency squad, utility lineman, or other employee who is assigned duties in connection with such events, the injury is considered a work injury.

7. The disabling injury severity rate has been placed on the same basis as the disabling injury frequency rate—viz: 1,000,000 manhours of exposure.

8. A third measure for evaluating injury experience is included. It is called the "Average Days Charged per Disabling Injury." This average is determined by dividing the total number of injuries into the total days charged as a result of the injuries. The measure is not new in statistical work, but it has not been part of the standard before.

These points are important:

1. The new standard is effective starting January 1, 1955. Injury summaries for 1954, which many companies are completing now, must be on the basis of the old standard.

2. The changes listed above are the principal ones only. There are other minor changes, and changes in wording for clarification. Users of the Standard are urged to get a copy of it from the American Standards Association and acquaint themselves with all of the provisions of it.

SMALL BUSINESSES and ASSOCIATIONS

By A. M. BALTZER and ROBERT D. CURRIE

Small Business Program Staff
National Safety Council

A Convention Idea

The unawareness of the meat industry to costs arising out of a typical small accident was graphically illustrated at the American Meat Institute Convention.

In its "Guess the Cost of This Knife Accident" contest, the AMI's Safety Committee found that one-third of the contestants had no idea how accident costs can mushroom. Of the balance, some showed a reasonably accurate knowledge of such costs, while few displayed enough familiarity with the subject to estimate relatively true figures.

While the total cost resulting from a severed finger tendon, based on actual costs experienced by a meat packer, was $1,170.67, the estimated range varied from $25.00 to $4,000. A delegate from Ohio was closest with a guess of $1,165.80. The Safety Committee points out that the cost of this accident represents the profit on about 200,000 pounds of meat.

This is a fine idea and we would like to see other associations give it a "go." It is an interest-stimulator that you might suggest to your association before your next convention.

Value Received

The American Paper and Pulp Association regularly receives from its members all fatality and disability reports and, as a part of the Association's regular service, publishes the facts in its Fatality and Disability Report. These reports are very good but do not accomplish their mission unless member companies check to see that they have taken the necessary precautions to prevent similar fatalities or disabilities in their own plants.

Recently the APPA received a fatal accident report. A short time later the Safety Committee received data, complete with sketch, photograph and standard safe practice instructions from the company involved, which, allegedly would have prevented the fatality. This material was forwarded to all safety survey participants in the hope that the experience of that company may be helpful in the accident prevention program of others in the same industry.

It's this type of cooperation that can make an association safety program so successful.

ASSE Teams Up With IMA

This Chicago Chapter ASSE has established a closer working relationship with the Illinois Manufacturers Association by appointing William O. Wilson, Standard Oil Company (Indiana) as liaison representative to the Illinois Manufacturers Association.

In his capacity as industrial counsellor and safety adviser to officers of the Association Mr. Wilson is in an excellent position to help in their campaign to control industrial injuries. His years of experience as an officer in the Council's Petroleum Section, on its Industrial Conference and Board of Directors plus his service as chairman of the Chapters Laws and Regulations Committee qualifies him to give extremely valuable service to the IMA.

Here's another way to put it. It takes a lot less effort to prevent one accident than it does to sell 30,000 EXTRA quarts of milk.

Co-op Medical Programs

Much has been said and almost as much written on the subject of co-op medical services for a number of small companies. However, not enough has been done except in a few isolated areas where one of the following two typical plans have been set up:

1. A central clinic to which small companies in the neighborhood send injured employees.

2. A roving industrial physician and one or more nurses make regular calls at a number of small companies in the neighborhood.

No one has questioned the soundness of the idea; its economies and other advantages are obvious. The problem is: How to get started?

At the risk of making it sound too easy, we'd suggest that:

1. ASSE Chapters and local safety councils use their facilities to urge small companies and their local business groups to band together to set up co-op medical services. The National Safety Council and the American Medical Association have more detailed suggestions for the asking.

2. Through their industrial physicians and company nurses, our readers can also work the other side of the street: urge the local county and medical boards and nursing associations to plan such services.

3. Through correspondence, and preferably through meetings, get local business groups such as Chambers of Commerce, manufacturers associations, local trade associations, etc, together with medical and nursing groups.

Translate your interest into action! Use your influence to pull together business and medical groups. You can count on us for plenty of help if you do get something started.

Model 175 —Medium size
Model 176 —Large size

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Build Them Yourself

By F. P. HUTCHINSON

Material kits, hand tools and moderate know-how will produce effective guards for many installations

A RECENT study of compensated personal injuries revealed these facts:

21 per cent of these accidents involved machinery.

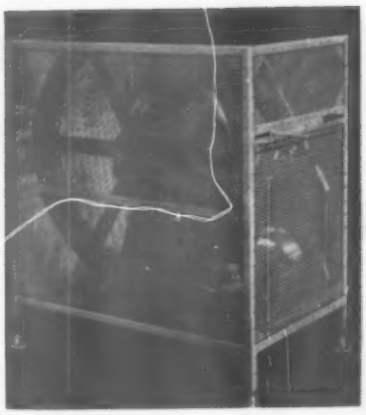
25 per cent of the permanent disabilities resulted from machinery accident.

Studies based on other exposures might produce slightly different results but, in general, these figures give a fair picture of the extent of the hazard and the importance of proper guarding. Guards must protect the operator against not only the normal operating hazards but also against his own mental lapses wherever possible.

Steel and aluminum are the materials generally used for guards. When a view of the work, the die or the machine itself is required then clear plastic panels are sometimes used or the guard material itself can be perforated which also provides ventilation and prevents an accumulation of oil, grease and dirt.

The progress of machine design, including individual motor drives, enclosed gears and moving parts has eliminated the old-time hazards from many machines. However, in every shop there are conditions requiring custom-made guards but when the building of such guards requires an engineering study of the machine operation, the making of drawings and then the actual fabrication of the guards, frequently by an outside

—*To page 85*



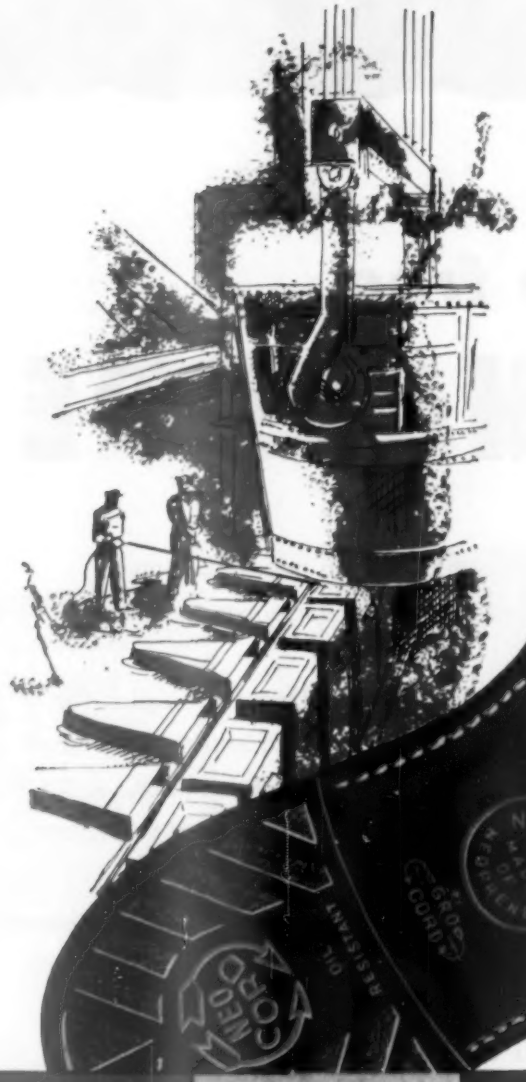
Much progress has been made toward built-in safety but many flywheels, gears and pulleys must be enclosed in the shop. Above is an example of an easily constructed guard installed by the maintenance department.

Below: Examples of materials and tools needed for "build-them-yourself" guards for transmission and point of operation.

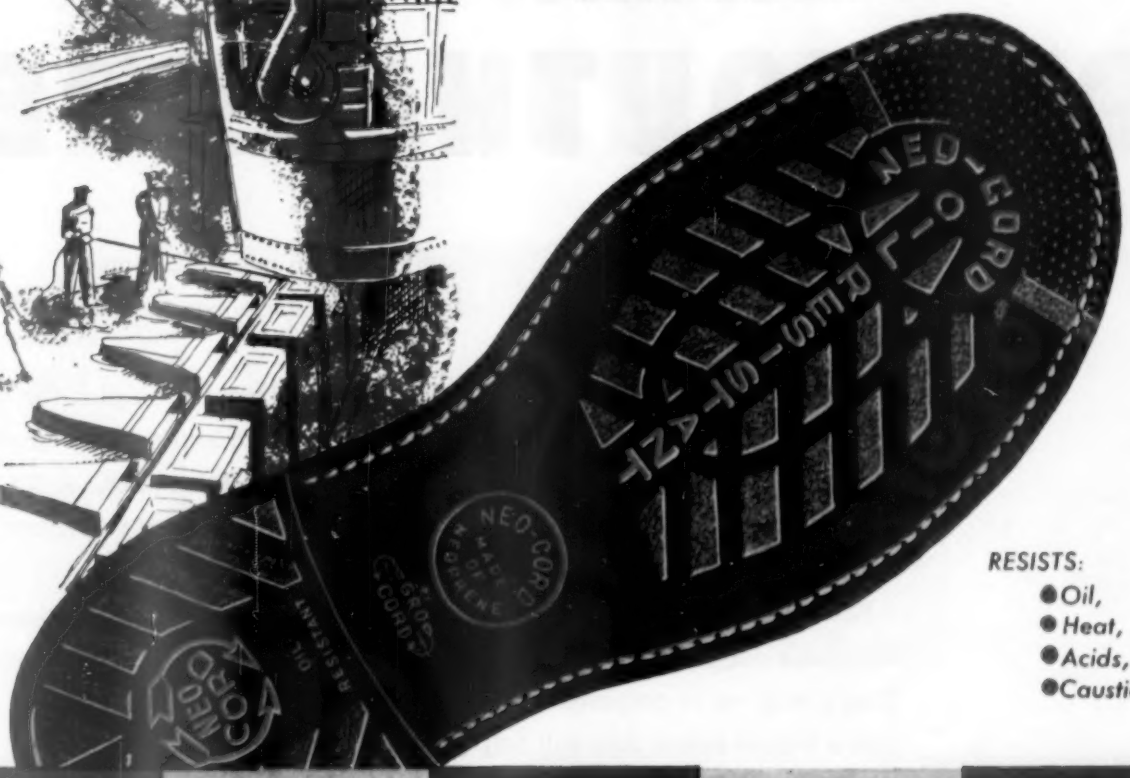
F. P. HUTCHINSON is with Harrington & King Perforating Company, Chicago.

A punch press enclosure guard built in the shop. The safety engineer and the operator can both contribute helpful ideas in effective guard design.

cool feet in HOT spots



Neo-Cord is the result of combining high grade cord with duPont Neoprene by the Multi-Angle-Cord process. This produces a sole and heel that successfully resists extreme heat, oil, grease, acids and caustics. This hard wearing, slip-resistant safety sole, is cooler than ordinary rubber or composition soles and stays flexible for more comfort during its long life. Factory tested by thousands of safety engineers, Neo-Cord has always proved superior under the most exacting conditions. For greater comfort and safety always specify soles and heels by Gro-Cord . . . specialists in industrial and workshoe soles.



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- *Heat,*
- *Acids,*
- *Caustics*

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Gro-Cord offers the only complete line of industrial workshoe soles that enable you to assure workmen of greater satisfaction through comfort—safety and longer wear, regardless of job conditions. Get acquainted with the complete line of Gro-Cord soles and heels, today!

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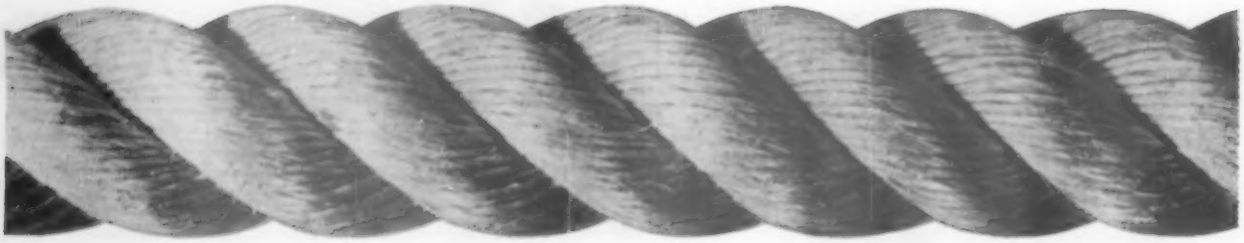

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Selecting the right rope is much easier when you specify Plymouth—but that's only half the job. Proper use and care are equally important. That's why we've prepared the set of handy desk charts shown here, plus a 4-page folder that will help you select rope, use it to optimum advantage and get out of it a long life of usefulness and safety. For in-plant training purposes there's a 32-page book, "How to Put Rope to Work in Industry."

Ask the Plymouth supplier near you to send you, without obligation, these valuable guides to safety first. Or write direct to us.

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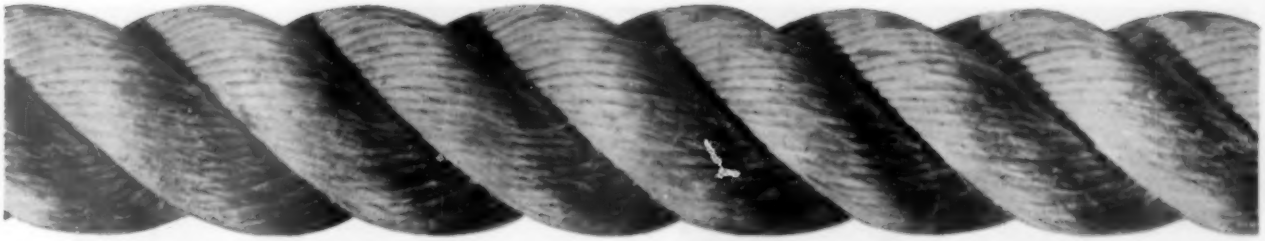
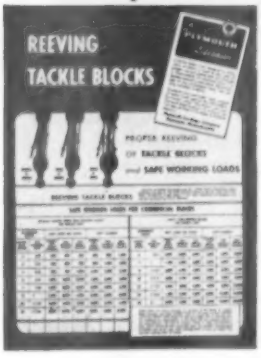
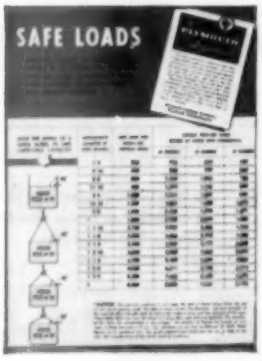


LIFESAVER IDEAS





One Hand Operation! Easy-to-handle Rockwood WaterFOG nozzle is made of aluminum alloy, weighs only 5 pounds, 5 ounces. Nozzle design reduces reaction to a minimum.

Boy puts out raging fire

The fuel oil test fire above was extinguished in a matter of seconds by a 12-year-old boy — thanks to remarkable Rockwood firefighting equipment.

By using a lightweight, 10-foot applicator, he was able to approach the fire safely as low velocity Rockwood WaterFOG was discharged through the applicator, quenching flames, choking off oxygen and cooling the surrounding area thus preventing "flash back."

Rockwood WaterFOG is the result of discharging water through a specially engineered Rockwood nozzle that breaks water into tiny particles which burst into a blanketing mist of steam that smothers fire. The Nozzle shown in use here is a 1½" Type SG 48. It can also discharge high velocity WaterFOG, and straight water stream. Available for ¾", 1", 1½" and 2½" fire hose sizes.

Plan to make this and other Rockwood firefighting aids part of your team.

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Cases for Comment

—From page 14

had back trouble periodically during the past eight years. He was eventually given a corrective high-heel type shoe by the doctor to aid in his particular case. He has since developed foot trouble (blisters, etc.) and his diabetic condition lends seriousness to the case and extensive lost time to the record. He is presently hospitalized with gangrene infection. Would this case be classified under Paragraph 3.6.1 of the Z16.1—1945 Code insofar as the corrective shoe caused foot blisters?

Decision. This case should not be counted in the company's work injury rates because of the impossibility of establishing that the employee's condition arose out of and in the course of his employment.

Comment. Paragraph 3.6.1 of the Z16.1—1945 Code states: *Illness resulting solely from antitoxin, vaccines, or drugs used in the treatment of a non-disabling injury shall not cause the injury to be classified as disabling.*

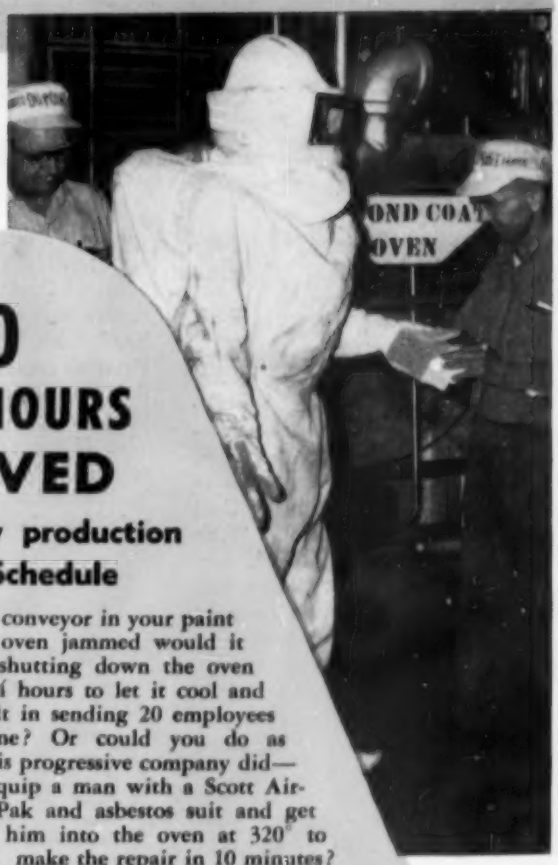
There was no work connected injury in this case; the difficulties of the employee did not arise out of nor in the course of the employment. In no manner could this situation come within the scope of Paragraph 3.6.1.

This does bring to attention the necessity for seeing that all equipment an employee is required to use is of proper size, design and in satisfactory condition. If, due to requirements of the job, an employee is required to wear a certain type of shoe which due to defects or improper size would cause an injury resulting in lost time, it would arise out of his employment and be chargeable. Nothing will discourage use of protective equipment more than having improper sizes, not keeping the equipment clean, sanitary, and properly maintained. In too many companies adequate consideration and control measures are not in effect with regard to these factors.

Undertaker: Professional boxer.

Scott Air-Paks

Cut Repair and Maintenance Costs, Safely!



200 MAN HOURS SAVED

in busy production Schedule

● If the conveyor in your paint drying oven jammed would it mean shutting down the oven for 24 hours to let it cool and result in sending 20 employees home? Or could you do as this progressive company did—equip a man with a Scott Air-Pak and asbestos suit and get him into the oven at 320° to make the repair in 10 minutes? A similar, costly interruption *could* happen in *your* plant tomorrow! 200 Man Hours is a lot of time to lose in a busy production program. Better take steps now to get on that 10 minute schedule!

On Hazardous Jobs Scott Air-Paks Help Management and Labor Breathe Easier

Write for free booklet "Scott Air-Paks Save Money, Man Hours and Men for Industry." We'll be pleased to send you a copy.

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GREEN CROSS NEWS

Activities of Local Safety Councils and Chapters

N. Y. Supervisory Course

The Twelfth Annual Industrial Supervisors Safety Training Course sponsored by the Greater New York Safety Council during November brought out a registration of 1500, the largest participation since the course was organized. There were four evening sessions, running from 7:00 to 8:30 p.m. Subjects included "Cost Control Through Safety," "Life Control Through Safety" and "Personality and the Management Man." One session was devoted to supervisory training of employees in accident prevention.

The Council reported recently that the Inter-Plant Contest, with 227,000 employees participating, showed a 13.3 per cent improvement in the cumulative accident frequency rate for the half-year contest period, May to October.

Heads Safety Society

Harold I. Hemphill, safety director, AiResearch Manufacturing Company, has been elected president of the Southern California Industrial Safety Society. He succeeds Richard Wilkins, chief safety engineer for North American Aviation, Inc., who automatically becomes chairman of the board of governors of the Society. The group works closely with the Greater Los Angeles Chapter in conducting its industrial safety programs.

Joins Industry Committee

Don Costa, executive director and secretary of the Alabama Safety Council and executive secretary of Alabama's Safety Commission, has been made regional representative of the Inter-Industry Highway Safety Committee, M. R. "Bud" Darlington, Jr., managing director, announced recently. Costa assumed his new duties the first of the year with headquarters in Montgomery. Prior to entering the traffic safety field, he was a news writer and photographer and during World War II served in military public relations. He left newspaper work in 1952 to launch Alabama's first safety conference.

Management Conference

The annual Management's Accident Prevention Training Course, held recently in Pittsburgh under the sponsorship of the Western Pennsylvania Safety Council and cooperating agencies, brought out an average attendance of 1100 industrial executives at the three evening sessions.

More than 50 industrial companies, including U. S. Steel, Westinghouse, Armco, Allis-Chalmers, American Cyanamid, Bethlehem Steel, Columbia Steel, Dravo Corp., Duquesne Light Co., Gulf Oil, H. J. Heinz Co., Jones & Laughlin, Pennsylvania Railroad, and many other nationally known concerns sent management representatives to the Conference.

Safety Seal Sale

A safety seal campaign to raise funds for local council support, tried out by the St. Joseph Safety Council (Mo.) recently, was a real success. The plan was a telephone approach with a three-minute appeal to buy the local council safety seals. The prospects were the telephone subscribers but present members and contributors were not approached.

In three weeks the council grossed approximately $5,000 with another three weeks to run. Besides a healthy addition to the budget, Manager Walter Ladd sees great value in the fact that the number of people contributing to the St. Joseph Safety program has more than doubled.

According to Mr. Ladd, there was no unfavorable reaction to the St. Joseph campaign, barring the usual handful of chronic kickers. Most of the letters and notes sent in with contributions were most heartening, praising the council and its accomplishments.

The Oldest Council

Secretary Harold Seward of the Lehigh Valley Safety Council, who also edits *Lehigh Valley Safety News*, in checking through the old files, discovered that the Council was organized October 13, 1913, closely following the founding of NSC. He also discovered that the Lehigh Council was chartered in December 1913.

The name of the Lehigh organization at that time was "Lehigh Valley Local Council No. 5 of the National Council for Industrial Safety." Of course that elongated title was soon cut down in size to the present name. The "No. 5" indicated that Lehigh was the 5th local council chartered by the parent organization. Secretary Seward says the first four have long since fallen by the wayside, which makes the Lehigh Valley Safety Council the oldest local council in the country.

In an interesting editorial delving into this ancient history, he wisely concludes that being the oldest local safety council is not important but what the council is doing *now* is what counts. Can any local council go back beyond 1913?

ALL TYPES...ANY CLASS FIRE!

Since different fire hazards require different types of fire extinguishers, PYRENE—C-O-TWO manufactures all types . . . the finest and most complete line on the market today.

When doing business with PYRENE—C-O-TWO, you receive unbiased advice on what is best for your particular fire hazards, whether class A, B or C. Also, there is a well-rounded sales engineering organization having nation-wide representation to render top quality service wherever you're located.

Don't take unnecessary chances . . . the extensive fire protection experience of PYRENE—C-O-TWO over the years is at your disposal without obligation. Get complete facts now!

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Taking Stock

By A. C. RUBEL

A survey of a conference reveals an immense reservoir of safe operating experience available to the industry

THERE ARE no trade secrets or competitive advantages to be gained by our competitors through the exchange of safety practices. We all profit. The importance of man's well-being and that of his family is universally recognized by management as an inseparable part of every well-run operation. It is for this reason this conference is held.

There is a limitless reservoir of safe operating experience and know-how represented here. An exchange of experiences, opinions and working methods among those who are best equipped to direct safe practices cannot help but produce real benefits to everyone in our industry. This is your opportunity.

The Board believes these conferences have been fully justified for numerous reasons, perhaps the most important being:

1. You have taken advantage of this forum by freely exchanging views on safe operating techniques, not just generalities but in panel discussion, with examples and discussions of actual operating problems. Such an exchange makes for results and alone justifies the conference.

2. You have incorporated safe practices as a part of your regular operating routine, as evidenced by marked improvement in accident statistics, and not just a thing to be talked about. There is still much to be done.

Safety on the job is an integration of common sense with good working technique. It is a way of thinking—not something apart, but something intimately and inseparably connected with our everyday working and living.

Safety is team work. There are few of us in modern industry who work alone. One unskilled, unsafe man on the job jeopardizes all of his fellow workers. A careless act or ignorance on the part of any member of a drilling crew can have fatal results to the entire crew; a lapse of safe operating practice on the part of a stillman or operator can envelop a refinery in flames; a false move by a truck driver on a crowded highway can cause a catastrophe; or a poorly planned cut by a welder can destroy an entire plant.

Safety is education. The essential ingredient of a safety program is not only to conduct ourselves safely, but to see that those men for whom we are responsible also conduct themselves so that the entire operation is a safe-working team play.

Safety is a 24-hour practice, not just the eight hours on the job. It is equally important in the home, on the highway or at play. An incapacitated man loses just as much of his earning and productive capacity by falling off a rickety ladder while fixing the down spout on his house, by jumping a stop sign on his way home from work and ramming some other car, or by shooting himself while deer or duck hunting, as by being injured on the job.

One of my personal criticisms of a certain type of safety training is that it embraces only the job. Let's not hang up our safe way of life when the whistle blows, along with our overalls and jumpers. Let's take it with us.

Safety should be the concern of the whole family and extend into the home. Statistics tell us the home is often a more hazardous place to work than in industry. We have not done a good job in this field.

An injured wife or child at home definitely affects adversely the man on the job and, even more important, a man injured on or off the job causes stress and strain, if not actual hardship, on his dependents.

Why can't we take advantage of this combination and bring the wives and families into the safety training picture?

When I was in the field, we once held a safety dinner, inviting—in fact insisting—that the wives attend. We explained our aims in safety and asked for their active and continuous support. We pointed out that they, the wives, oftentime suffered more by loss of income and all of its attendant effects than the injured wage earner. The meeting was a great success, but we somehow failed to follow it up.

Conferences are productive of results in direct proportion to the effort you put into them. Management supports it not only because the promotion of safety pays dividends in less medical and compensation costs and more efficient work, but, more important, for the security and good feeling which accident-free working conditions promote.

A. C. RUBEL is Vice-President, Union Oil Company of California, Los Angeles. This article has been condensed from an address before the Oil Industrial Regional Safety Conference, Santa Barbara Coastal Area, December 1, 1954.

Stonehouse SIGNS

FOR INDUSTRIAL ACCIDENT PREVENTION

DANGER
HIGH VOLTAGE
NOTICE
THIS GATE MUST BE CLOSED BEFORE THE ELEVATOR CAN BE OPERATED
ALL HANDS ARE REQUESTED TO HELP KEEP THIS PLANT SAFE AND CLEAN
A FIRE MIGHT PUT EVERY ONE OUT OF WORK HELP THE MANAGEMENT PROTECT YOUR JOB NO SMOKING
FIRE EXIT
CAUTION — DON'T — CLEAN - OIL - REPAIR MACHINERY WHILE IN MOTION
THINK
THE BEST SAFETY DEVICE IS A CAREFUL WORKER GET THE SAFETY HABIT
DANGER
WEAR GOGGLES WHEN CHIPPING OR GRINDING
SAFETY FIRST
POSITIVELY NO SMOKING
NOTICE
POSITIVELY NO ADMITTANCE EXCEPT ON BUSINESS

There are many types of Stonehouse Signs. Most are worded to cover specific hazards, such as Eye and Goggle signs, Fire, Machine, Electrical, and so on.

Others are important for the protection they furnish, covering such features as Entrance, No Parking, Stop and similar warnings—listed as Miscellaneous signs.

STONEHOUSE SIGNS

Whatever your hazard, warning or guidance requirements, there's a Stonehouse sign to meet them. Shown in full color in our complete 64-page Catalog.

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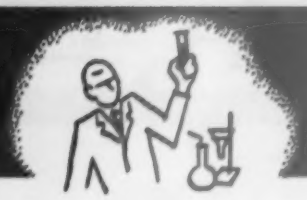
"Signs Since 1863"

ACCIDENT PREVENTION • *steel* SIGNS IN STANDARD COLORS AND DESIGNS

INDUSTRIAL HEALTH



Abstracts of current literature on Industrial Hygiene, Medicine, and Nursing

BY F. A. VAN ATTA
Industrial Department, NSC

Radioactive Materials

Hazards of Radioactive Materials, by Paul E. Smith, Jr., presented at the 19th annual meeting of the Industrial Hygiene Foundation, November 17, 1954.

THE PHENOMENAL GROWTH in the use of radioactive materials over the past few years has been largely in military and governmental installations but the 15 to 20 per cent of it which has been in private institutions is still a sizable amount. The number of radioactive materials available for use has grown surprisingly long. The National Bureau of Standards lists 78.

Since any of these may be of use to industry, especially as tracer elements, it is convenient to consider their control in terms of the type of radiation emitted rather than in terms of the types of material which are emitting the radiation. While the materials are used loose, however, one must keep in mind the chemical characteristics, since the materials may find entry into the body and must then be either stored or eliminated.

Setting of standards for these radioactive materials is considerably more difficult than the setting of standards for x-radiation since many of them produce mixed radiation and may be hazardous both as external sources and as internal sources of alpha and beta radiation if they find entrance to the body.

Protective measures in handling radioisotopes are directed to the container or housing for the radioactive material to prevent the ingestion, inhalation or other entry of radioactive material into the body. The radioactive material is generally sealed into a container which is secured in a second container. The external container is examined periodically for loss of material or for external radiation.

The second consideration is to reduce the amount of external radiation to personnel to permissible levels. This is done by the provision of barricades or shields and of remote handling equipment. The type of shielding and of remote handling equipment as well as the precaution to prevent congestion of the material are fixed primarily by monitoring the area of use and the individual by some method to assure that the radiation levels in the air and the amounts which may be absorbed are within permissible limits.

A variety of instruments is available for measuring radiation intensities in the air, on surfaces and on or in personnel. Fundamentally, they are dependent upon the measurement of the ionization produced in air by the radiation and either measured by the rate of discharge of an electrometer or the conductivity between electrodes in the air or upon the scintillations produced in a phosphorescent crystal.

Radioactive Wastes

Ultimate Disposal of Radioactive Wastes, by W. S. Ginell, Jerry J. Martin and L. P. Hatch. Nucleonics Vol. 12, No. 12, December, 1954, pp. 14 through 18.

THE DISPOSAL of highly active fission product wastes presents a serious problem. The most common method at the present time is to hold the materials in underground tanks. There, is, however, no adequate information to indicate the safety or the permanence of such storage in tanks. There is not much doubt that a method of disposal which appeared more permanent would be more desirable, provided it were comparable in cost.

The method proposed here is based on the adsorption of radioactive materials in montmorillonite clay. The ion exchange properties of minerals of this particular group have been recognized and investigated for a number of years. The clay used in this investigation was a calcium saturated montmorillonite with a capacity of 1.12 milli-equivalents per gram for ion exchange. In actual tests on radiactive fission products, the exchange was found to vary from 1.07 to 1.15 milliequivalents per gram.

The clay is quite selective for the fission products in the presence of substantial concentrations of monovalent and divalent foreign ions. The absorption reaction is, however, reversible in the presence of high concentrations of other salts and it was necessary to devise a means for stabilizing the absorbed fission products after they had been collected.

This stabilization was accomplished by heating the clay to a high temperature in a muffle furnace or by pressing the clay particles through the flame of an oxygen-illuminated gas torch. After either of these treatments, the replacement of the adsorbed radioactive material was extremely slow.

Because these clays are composed of very fine particles which pack very tight, a bed of the clay is practically impervious to water. The columns were made by mixing the clay with a small amount

—*To page 93*

HOT OFF THE PRESS!

WANT to get folks talking and thinking about highway safety? Then just hand them a copy of Highway Zoo. The Council's new 4-color booklet is a conversation piece. Ideally suited for use in off-the-job accident prevention programs, it will give zip to your safety efforts. And it is one book you can use as a souvenir item at your Safety Award Banquet, safety conference, etc. Many firms will use them in 1955 as mailing pieces. It will fit your program to a "T."

Prices: Single copy free; 2 to 9 copies, 10 cents each; 10 to 99, 7 cents; 100 to 999, 5 cents; 1,000 to 4,999, 4 cents; lower prices in larger quantities.

NATIONAL SAFETY COUNCIL

425 North Michigan Avenue • Chicago 11, Illinois

new

Jackson SAFETY HATS and CAPS — Cap-and-Helmet Combinations

For protection against falling objects and other sudden impact, and against bumping the head in close quarters, the new Jackson Safety Hats are a *safe* and *sound* investment.

Made of fiber glass plastic, the strongest protective material per ounce of weight, these safety hats surpass all known industrial requirements. They comply with Federal Specifications GGG-H-142b when tested for *electrical resistance*, *impact* (the 8-lb. ball test), *penetration* (the 1-lb. plumb bob test), *flammability*, and *water absorption*. At 14 ounces, *weight* is well below the specified limit.

Two types are available: the full-rimmed *Hat* and the *Cap*, with visor only. Unless otherwise specified, they will be furnished in an attractive, bluish grey.

ALSO FOUR OTHER STANDARD COLORS . . . White, Yellow, Green and Brown

Arc Weldors are offered the choice of the two already popular fiber glass arc-welding helmets, types H-1 and H-2, pivoted to the sides of the Safety Cap. Helmet goes easy *on*, easy *off*. Just slide it in to assemble, push the button to release. Your present helmet, H-1 or H-2, may be utilized by ordering Safety Cap plus Helmet Attachments.

EXCLUSIVE . . . Headband of Extruded Plastic, Cork-Lined Sweatband

Plastic Headband allows immediate, positive adjustment, is clearly marked in hat sizes, holds its shape, and gives firm fit on all sizes of heads. Straps of webbing button to inside of hat shell, and provide adjustable support on top of the head. They provide the required safe distance between top of head and hat shell and leave ample room for ventilation all around.

JACKSON SAFETY HAT — TYPE SH-1

Strongly ribbed crown design and full brim resist impact from all sides. Fiber glass plastic gives the greatest protection per ounce of weight.

JACKSON SAFETY CAP — TYPE SC-1

Identical with the Safety Hat but with only a narrow brim at sides and back, and a visor protecting the face. Weight 12¼ ounces.

JACKSON CAP-AND-HELMET — TYPE SCH-1

Arc-Welding Helmet, type H-1, pivoted to standard grey Safety Cap. Both are fiber glass of matching design and color. Visor is worn in back.

JACKSON CAP-AND-HELMET — TYPE SCH-2

Lift-Front Helmet, type H-2, permitting work inspection without raising of entire helmet, pivoted to Safety Cap. Units are detachable without tools.

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Sold World Wide . . . through Distributors and Dealers

Eye Protection Got the Green Light

And the safety record got a lift

By A. L. SCHWAN

Tony Huber's safety glasses probably saved more eyes than his own. His case gave a boost to the eye protection program.

"MY FOREMAN doesn't have to tell me how necessary safety glasses are," says Tony Huber. "Think where I'd be without them!"

Tony, a melter in the foundry department of the Indiana Steel Products Company, at Valparaiso, Indiana, was standing by the furnace waiting for a heat to get ready when suddenly hot metal flew from the furnace hitting both lenses of his safety glasses. It made a lasting impression throughout the plant.

A few months before the outcome might not have been so fortunate. In reviewing the medical cases for the previous year (employee injuries referred to the company doctor by the plant nurse) it was brought forcibly to management's attention that 27 per cent of these cases were caused by foreign bodies in the eyes. None of these injuries, fortunately, was serious but any one of them could have been.

Such a condition required correction, and top management gave eye protection the green light. Here are the steps in setting up the program:

1. First step was a plant survey: Who wore safety glasses? What type was worn? Were they corrective or plano glasses?

2. Types of safety glasses needed for various plant operations was determined.

3. Program was brought before the Joint Safety Committee for approval and they pledged their cooperation in carrying out the program.

4. A letter was sent to all employees, plant and office, from the president of the company announcing the program and soliciting cooperation.

5. Eye-catching posters, emphasizing the necessity for eye protection were posted throughout the plant, and printed pamphlets were attached to pay checks.

6. Optometrists in the area were invited to a luncheon at the plant and their ideas and cooperation were invited.

7. A stock of various sizes of safety glasses was ordered. Only one style was purchased to avoid any problem resulting from employees disagreeing on style.

8. Local optometrists agreed to come to the plant and fit all employees requiring non-prescrip-

—*To page 102*

Local optometrists and a representative of the optical company help in fitting employees with non-prescription goggles. Complaints are now fewer.

A. L. SCHWAN is Industrial Relations Manager, The Indiana Steel Products Company, Valparaiso, Indiana.

OUT OUR WAY
WHAT'S HARRY CHASIN' THE SWEEPER FOR?
TH' KID FORGOT TO PUT SOL-SPEEDI-DRI ON THE FLOOR, AND HARRY TOOK A SPILL!
J.R.WILLIAMS
THE CHASE

Lasts longer—cleans best!

SOL·SPEEDI·DRI

When you see a factory floor that's bone dry, spanking clean, the chances are about two to one that it's been treated with Sol-Speedi-Dri, because this miracle oil and grease absorbent outsells others by that margin. Try it, and you'll see why. It spreads faster, covers more ground, "dry cleans" better. And consistent high quality is maintained by careful laboratory controls. Send coupon today for free sample.

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Inquirers in New York, New England, and New Jersey should write to Speedi-Dri Corp. Elsewhere in U.S. to Waverly Petroleum Products Co., 1724 Chestnut St., Phila. 3, Pa. In Canada, G. H. Wood & Company Ltd., Toronto. Branches throughout Canada.

FREE SAMPLE Fill out the coupon and mail today for free sample and literature.

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NSN-255

U. S. Steel's Fall Guy Comes to Life

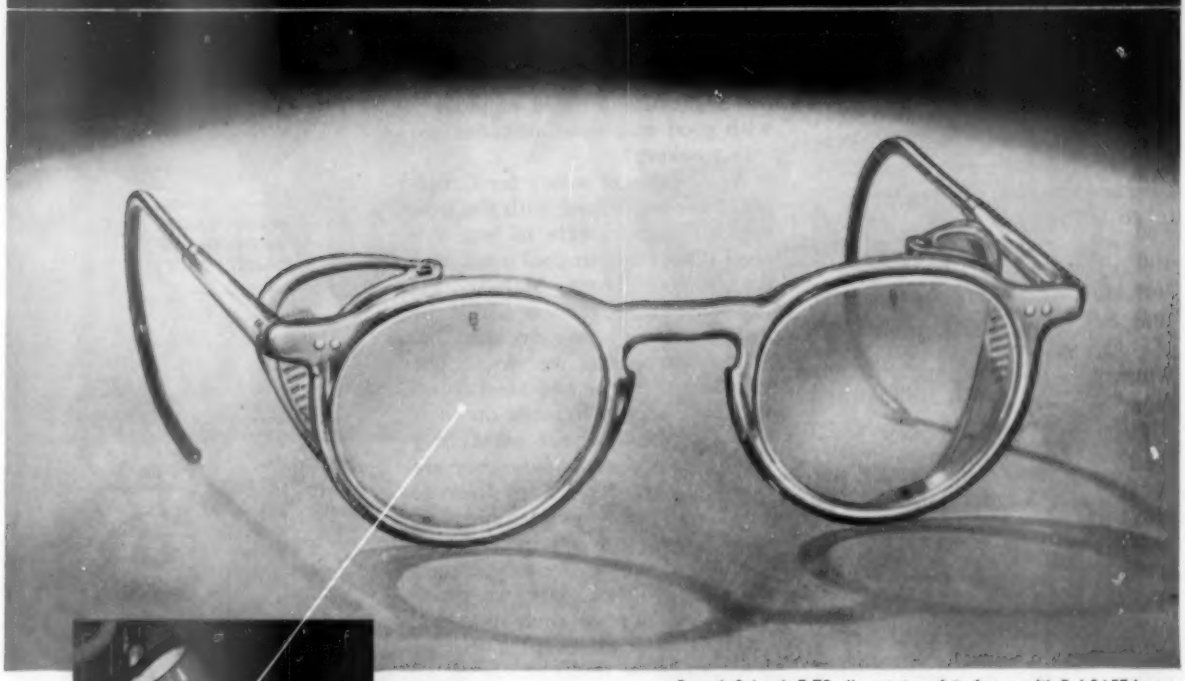
STEW PIDD, comic strip character who has been appearing since 1950 in *WireCo Life*, employee publication of American Steel & Wire Division, has not only come to life but to Cleveland. He is shown below with his creator Arthur J. Beiler, editor of *WireCo*.

After four chaotic years of smashed toes, blackened eyes, broken arms and cracked sacroiliacs, the not-so-safe safety character has acquired a life-sized body, a voice and a resolution to do better in the new year.

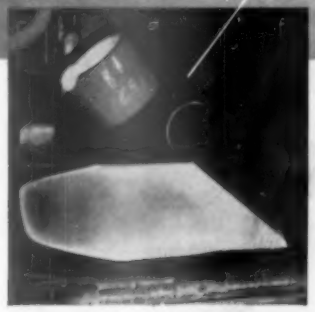
This cartoon personality who gets his safety do's and don'ts mixed and usually lands in the hospital, was constructed at the Duluth Works of this U. S. Steel unit to stimulate interest in its safety program. His head is realistically painted and his feet are plaster casts with the left shoe cut to show the scars of his past misbehaviors. *Stew Pidd* is wired with a speaker in his chest and is given voice by tape recorder. Eight-minute scripts are recorded and these safety messages are given at American Steel & Wire plants.

Currently on tour through the Division's mills in Cleveland, *Stew Pidd* is expected to have a number of twin brothers shortly who will be permanently located in the other plant cities to deliver safety topics of the day.

SAFETY LENS QUALITY IS NEVER A LUXURY



Bausch & Lomb Z-79 all-acetate safety frame with Bal-SAFE lenses



From sand to glass—to finished safety lenses, manufacturing methods are precision controlled in the world-famous Bausch & Lomb plant at Rochester, New York.

Where visual correction is needed, there's extra safety in Bal-SAFE lenses professionally prescribed, ground to the worker's prescription.

Bausch & Lomb glass technology insures an **EXTRA** margin of safety in Bal-**SAFE** lenses

For eye protection the lens is the thing. It may stand between a worker's precious vision—and tragic, eternal blackout.

You provide the finest protection science offers—when you specify Bausch & Lomb protective eyewear with Bal-SAFE impact-resistant lenses.

Only the finest glass is used—made in the nation's only plant devoted exclusively to production of optical glass—Bal-SAFE lenses are free from imperfections that can lead to disturbed vision, headaches and nausea. Bausch & Lomb heat treating methods insure the precise control necessary for a superior degree of impact resistance.

Acquaint yourself with Bausch & Lomb safety eyewear and with the extra quality of Bal-SAFE lenses. There's a representative in your area.

BAUSCH & LOMB

SINCE 1853

Just mail this coupon with your business letterhead to get your free copy of "Complete Eye Protection."

BAUSCH & LOMB OPTICAL COMPANY
90338 Smith St., Rochester 2, N. Y.

Suggestion Program

(From page 35)

1. A will to survive
2. A desire for approval or recognition
3. A desire for material gain
4. A sense of responsibility
5. A desire for leadership

Make no mistake about it, it is possible to make most workers and supervisors safety-minded, if they are encouraged to participate in an activity which will pay off on every one of these accounts. Today, we are alert to the fact—and we must make our supervisors and workers aware of it—that the suggestion system is one of the best activities through which every one of these requirements can be satisfied.

For instance, in our company, we have screened and studied the records of a large number of employees who work under comparable hazard conditions. We screened out accidents caused by unsafe conditions, and also accounted for chance factors. We found one group with none or few accidents. We found a second group with a large number of accidents. In the high accident group we found workmen who had bad absenteeism records, were tardy and had to be disciplined. It is worthy of note that these workmen turned in no suggestions. On the other hand, the low-accident group had a good record for attendance, work output and conduct. This group turned in many suggestions.

To further validate these findings, we recently made another study in two of our plants. We reviewed the records of the employees who had submitted the most suggestions and also of those having the most adoptions. We then compared their injury records with the average injury rate of the plants. We found that there was a relationship between the injury rate and the rate of submissions and adoptions.

To illustrate:

	Rates Per Year Plant A	Plant B
1. All employees—average injury rate	3.04	1.38
2. Employees with most suggestions	2.20	1.20
3. Employees with most adopted suggestions	2.20	.90
4. Combined rate of (2) and (3)	2.20	1.10
5. Percentage of injury reduction of (4)	27.6%	20. %

Does not this indicate that the suggestion-minded employees with good employee attitudes are safe workers?

As director of safety for Crucible, I am concerned with the prevention of accidents in our five steel plants, in our coal mine, and on our river boats. Management insists that preventive action be initiated *before* any accident occurs. Therefore, we want our workers to be on the alert at all times to hidden hazards on their jobs, to think about what they are doing and about how they are doing it. We don't want them to think only of ways of improving machinery and equipment, although, of course, we solicit these important ideas, but we want them to improve their personal ways of working. In short, we want them to think safety at all times.

I am convinced that there is a way of preventing every known type of accident. Before we can find it, however, we must first reach the man who is closest to these hidden hazards. Is this the safety engineer? No, for the safety engineer cannot see even one-tenth of the hidden hazards. He learns about many of them only after an accident has occurred.

Can it then be in stimulating serious thought in the minds of workmen who spend their days among the hidden hazards of industry? Perhaps. The man who works with machinery eight hours each day is certainly the man who should see the hidden hazards. But how to make him conscious of them? How can we get him to think about them, to think constructively about them? And how can we harness his thoughts and use them?

Through the suggestion system, we provide strong incentive for our employees to think seriously about their jobs and the possibility of accidents on those jobs, and to submit their ideas for eliminating job hazards through the formal channel of a suggestion system.

On the company end of it, there are considerable benefits that stand to be gained in the form of reduced accidents, greater production and increased morale . . . while the employee benefits

—To page 86

the LIGHTER SIDE
NATIONAL SAFETY COUNCIL
YOU DON'T HAVE TO PRONOUNCE IT-JUST READ IT!
E
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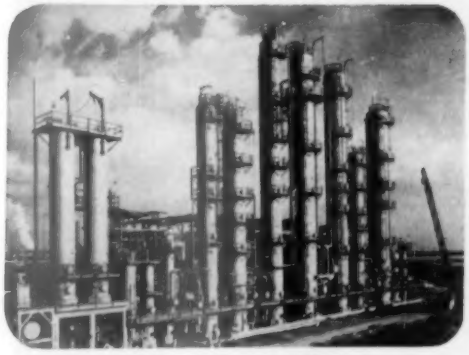
BUT ELMER, WHAT WAS YOUR FORGETTING TO INSPECT YOUR SAFETY BELT GOT TO DO WITH OUR GOING TO THE DANCE TONIGHT?
SLIPPERY ISN'T IT?

Complete FIRE-ENGINEERED *Protection*



Refineries, Chemical Plants

Bulk Plants, Storage Tanks

Industrial Flammable Materials

FIRE TESTED AER-O-FOAM

Wherever flammable liquids — oil or solvent — are used or stored, you need AER-O-FOAM Protection. National Foam will fire-engineer a completely integrated AER-O-FOAM System specifically related to your operations and hazards.

National offers you "triple-guard" fire protection: (1) Custom-designed system. (2) Quality-controlled foam made by National for National devices. (3) Fire-tested foam, every batch pre-tested on a flammable liquid fire.

Don't gamble with fire. Don't buy fire equipment piecemeal. Let National fire-engineer your foam system for instant, *positive* protection.

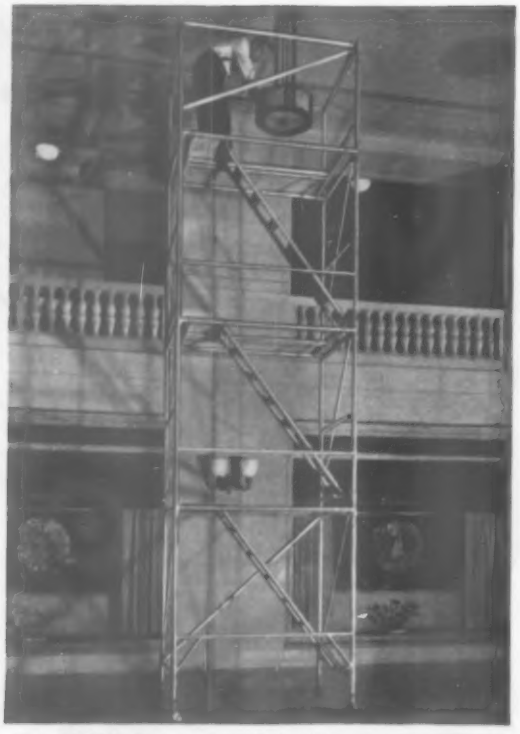
Write for new, free booklet, "Foam Fire Protection".

NATIONAL

FOAM SYSTEM INCORPORATED

Headquarters for Foam Fire Protection — WEST CHESTER, PA.

WASHING WINDOWS, painting, building repairs and general overhead maintenance on this typical building is speeded by this lightweight, mobile 2-section "Fold-A-Way" Aluminum Scaffold. Adjustable legs are equipped with casters that lock both wheel and swivel into stationary position.



NO ACROBATICS are needed while re-lamping when a "Fold-A-Way" Scaffold is on the job. The easily-assembled, completely safe "Fold-A-Way" is rapidly becoming a basic working tool with maintenance engineers. Underwriters' Laboratories approved.

New Aluminum Scaffold Swings Open Like a Book

ONE MAN CAN ERECT the base section of a "Fold-A-Way" Aluminum Scaffold in less than sixty seconds! And a full three-level assembly is completed in a few minutes time.

Easiest assembly, mobility and completely safe workroom make it a real time-saver for all types of off-the-ground work. Exclusive features make the "Fold-A-Way" far easier to erect . . . end frames swing open sideways (like the pages of a book) while the scaffold is in a standing position. Since the end frames require only an easily-managed swing of about 90-degrees, the erector is always *within* the base area. The "Fold-A-Way" stands freely and does not "fold under" during erection. Superior construction includes coped, full-welded joints and special adjustment legs with casters that lock at both wheel and swivel.

The "Fold-A-Way" actually "folds away" into compact 6 ½ in. thick packages that are easily carried, transported or stored. Write for free Bulletin ASF-1.

End frames swing outward like pages of a book. Entire base section is free standing—end frames will not fold under during erection.

NEW . . .

Improved safety screw leg for "Fold-A-Way" Scaffolds is designed to give maximum adjusting speed with minimum effort. By simply turning the ball-bearing collar you get accurate adjustments to the required height, up to 24". Leg will not fall out while Scaffold is being carried or transported. Adjusting leg cannot be left unlocked or partially unlocked.

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ALUMINUM LADDER SCAFFOLDS

Erected from ladder frames of three heights, these 24" and 4'6" wide Scaffolds are available in spans of 6 ft, 8 ft or 10 ft. Approved by UL.

THE SAFETY LIBRARY

Books, Pamphlets and Periodicals of Interest to Safety Men

Compiled by Ruth Parks, Librarian, NSC

BOOKS AND PAMPHLETS

Research on Fatigue

The Ergonomics Research Society Symposium on Fatigue, edited by W. F. Floyd and A. T. Welford. Published By H. K. Lewis and Co., Ltd., London, 1953. Distributed in the U.S.A. by John de Graff, Inc., 64 W. 23rd St., New York 10. 196—VIII pages, $4.00.

THIS LITTLE BOOK is a collection of 20 of the 27 papers presented at the Ergonomics Research Society Symposium on Fatigue in March 1952. The value of the papers in any symposium will vary, depending partly on the needs and desires of the reader and partly upon the talents of the individuals presenting the material. This one is certainly no exception.

The subjects vary from the study of the effects upon muscle of long-continued heavy exertion to the reduction in attention as the result of long watching of a dial or of other monotonous tasks. The quality varies through almost as wide a range from the individual who starts from the premise that it requires the same expenditure of energy to raise a body against gravity as to lower it with the assistance of gravity to a very scholarly summary of the relation between lighting and the fatigue produced by visual tasks, so far as the relations are known.

There is much in the text which has practical application and enough indication of the difficulty of practical application and of the anomalous results which often appear in the practical world to keep almost anyone reminded that there are still extremely wide gaps in our understanding of the nature of fatigue effects, even of the nature of the purely physiological kind of fatigue which is involved in the variation of response of a muscle to repeated stimulations to do its utmost in production of work. Several of these individual papers would each be worth the price of the book to persons engaged in personnel work. It will repay the time and effort involved in the reading and defining the present bounds of our knowledge if you get nothing else out of it.

Unfortunately, the editors have not chosen to provide the volume with an index. This very common failure among those who edit papers from symposia and other types of meetings is one of the major factors in making such collections so often merely a weight on library shelves. Even with relatively short papers of the sort presented here the utility would be greatly increased and the fatigue involved in using them greatly reduced by this addition.

F. A. Van Atta

Chemicals

Chlorine. Safe Practices Can Prevent Injury from Chlorine. U. S. Bureau of Labor Standards. Revised 1954, 15p 10c. Controlling Chemical Hazards Series No. 2. For Sale by the Superintendent of Documents, Washington 25, D. C.

Gas Industry

Purging Principles and Practices. American Gas Association, 420 Lexington Ave., New York 17, 1955, 225p. Price to AGA Members $5.00 each, $4.00 each in lots of 10 or more; to non-members $6.00 each, $5.00 each in lots of 10 or more; to students $4.00 each.

Legislation

Occupational Health and Safety Legislation. U. S. Public Health Service, 1954, 315p. $1.25 Public Health Service Publication No. 357. For Sale by the Superintendent of Documents, Washington 25, D. C.

Mines

Central Mine Rescue Station, The Cleveland-Cliffs Iron Co. Mather Mine B. Shaft, Negaunee, Mich. U. S. Bureau of Mines—1954, 17p. Information Circular 7702. Free. Available from the Bureau, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

Elimination of Ethyl Mercaptan Vapor-Air Explosion in Stench Warning Systems. U. S. Bureau of Mines, 1954, 8p. Report of Investigation 5090. Free. Available from the Bureau, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

A Network Analyzer for Solving Mine-Ventilation Distribution Problems. U. S. Bureau of Mines, 1954, 13p. Free. Information Circular 7704, Available from The Bureau, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

Recommended Standards for Installation and Maintenance of Haulage Roads. U. S. Bureau of Mines, 1954, 30p. Information Circular 7701. Free. Available from The Bureau, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

Testing for Methane In Out-of-Reach Places. U. S. Bureau of Mines, 1954, 9p. Information Circular 7703. Free. Available from the Bureau, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

Public Employees

Developing a Safety Program for City Employees. By W. D. Heisel, Civil Service Assembly, 1313 East 60th St., Chicago 37, 1954, 5p. $2.00.

Care of Radium Capsules, Association of Casualty and Surety Companies, 60 John St., New York 38. 1954, 6p. Special Hazards Bulletin Z84.

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Accident Statistics

Industrial Accident Control, By Robert E. Lee, Pt. 2, Supervision, Dec. 1954, p18.

Commercial Drivers

A Visual Approach to Adult Driver Education, By E. F. Hockenbeamer, Electric Light and Power, Dec. 1954, p88.

Fire Protection

Fire-Resistant Coatings; By P. F. Yopes, Coal Age, Dec. 1954, p74.

How Industrial Fires Can Be Avoided. Pacific Factory, Dec. 1954, p44.

How to Fight a Fire Before It Starts, By Edward D. Mackie, The Plant, Dec. 1954, p47.

Ten Firemen Killed When Chemical Tank Explodes. Fire Engineering, Dec. 1954, p. 1128.

Foundries

Foundry Workers Pneumocomosis,

By O. A. Sanders, A.M.A. Archives of Industrial Hygiene and Occupational Medicine. Dec. 1954, p 512.

Smog Control in the Foundry. By Harry Dok. American Foundryman, Dec. 1954, p46.

Handling Materials

This Conveyor System Has Air Lifts to Drop Parts in Assemblers' Laps. Factory Management and Maintenance. Dec. 1954, p93.

Dragline Moves 100 Tons An Hour, Safely and Quietly. Fleet Owner, Dec. 1954, p42.

Scoop and Box Help Fork Truck Handle Scrap. Factory Management and Maintenance, Dec. 1954, p124.

Health

Effects of Inhalation of Low Concentrations of Sulphur Dioxide Upon Man and other Mammals. By Isidor Greenwald. AMA Archives of Industrial Hygiene and Occupational Medicine. Dec. 1954, p455.

Health Hazards Involved in the Use of Parathon in Fruit Orchards of North Central Washington. AMA Archives of Industrial Medicine and Occupational Medicine. Dec. 1954, p522.

Industrial Antimony Poisoning. By Heinrich Brieger and others. Industrial Medicine and Surgery. Dec. 1954. p521.

Inhalation Toxicity of Hydrazine Vapor. By Charles C. Comstock and others. AMA Archives of Industrial Medicine. Dec. 1954. p476.

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Electric Braking System for Mine Locomotives. By A. B. Chafetz and others. Engineering and Mining Journal. Dec. 1954. p89.

Protection-Plus Incorporated in Ventilation Plan. Mechanization. Nov. 1954. p99.

Noise

The Occupational Loss of Hearing Problem Under The Workmen's Compensation Law. The Monitor (Associated Industries of the State of New York) Nov. 1954. p5.

Why Compensation for Impairment of Hearing Concerns You. By Joseph R. Shaw. The Monitor (Associated Industries of the State of New York) Nov. 1954. p7.

Nurses

The Nurse in Industry. By Jean Spencer Felton. Industrial Medicine and Surgery. Dec. 1954. p547.

Pressure Vessels

How to Select and Apply Safety Heads for Protection of Pressure Systems. By J. F. Myers. Power. Jan. 1955. p94.

Psychology

Psychology Research in Accidents, Some Methodological Considerations. By Kenneth Steel and Philip H. Du Bois. Journal of Applied Psychology. Dec. 1954. p397.

Time Intervals Between Accidents. By Alexander Mintz. Journal of Applied Psychology. Dec. 1954. p401.

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Safety Training for Foremen. By Earl E. Taylor. American Gas Association Monthly. Dec. 1954. p15.

Trucks

Mirrors Prevent Accidents. By Homer Steiner. California Safety News. Dec. 1954. p5.

Ventilation and Exhaust Systems

Ventilation Systems Can Be "General" or "System" Types. By George W. McCormick, Jr. The Plant. Dec. 1954. p60.

Announcing

THE COMPLETE NEW LINE YOU'VE BEEN WAITING FOR

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SAFETY CANS

Approved by Underwriters Laboratories & Factory Mutual

Here's the new SAFE way to handle and store flammable liquids, anyplace for any purpose. Genuine Eagle Safety Cans are now available in 5 different sizes from 1 quart to 5 gallons. No waste, no splash, no spill. Strong, durable one-piece construction—absolutely no seams. Bottoms reinforced with heavy steel hoop. Self-adjusting guard cap prevents leakage if can is upset. High-gloss red baked enamel finish.

A SMART NEW LINE WITH A GOOD OLD NAME

TRIGGER TYPE

1 qt., 2 qt. and 1 gal. sizes feature trigger-grip handle. To open, simply squeeze handle. Pouring is positively controlled without changing hand or grip position.

FREE-SWING TYPE

2½ and 5 gal. sizes come with free-swing handle. To open, simply engage handle in gear groove and press down. Positive control.

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All cans are not alike

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EAGLE SAFETY CANS

Getting the Most Out of a Conference

THE FOLLOWING SUGGESTIONS were prepared by the Western Oil and Gas Association for the benefit of those who attended the Oil Industry Regional Safety Conference in Santa Barbara, Calif. They are equally appropriate for a National Safety Congress or a regional safety conference:

The Oil Industry Regional Safety Conference is a *participation* Conference, not a series of lectures. There's nothing formal about it, no motions, no rules of order, no voting, no resolutions. Discussion is its life. *You* are important to its success. *You* are there to trade ideas and share experiences. The section panels will not have all the answers. *Your* ideas are wanted. The others want to learn from *you*, get *your* thinking, *your* experiences.

Here are some pointers on how to get the most out of it:

1. Think and plan what you want from the Conference. Don't just attend. Figure the problems you need help on, then find the men there who can help you.

2. Write or phone ahead to men you want to meet and tell them you'll be there. Use your meal and break times to get together.

3. At your section sessions take notes on things you don't agree with as well as those you do.

4. If you have a strong opinion based on your own experience, present it during the discussion. Speak up. Throw in your questions and observations. Admit you want information about any problem that concerns the safety of your men. The other guys face the same problems you do.

5. Don't be modest about your safety accomplishments, actual experiences, real cases, your men, your situation.

6. Plan to meet five or ten men from other companies. Talk safety with them, eat with them, sit with them. Really get acquainted. A man's richest resource is the people he knows.

7. Renew five or ten old acquaintances.

8. Introduce yourself to strangers when you sit down to eat. Make it a point to introduce others. Don't be afraid to look at their lapel badges; that's what they're for. Eat in a different group at each meal.

9. Make it a point to contact your new acquaintances when you return home.

10. Pick out the parts of the program you especially liked and write or phone the speakers, thanking them for what you got out of it.

You will leave the Conference better off than before, and your men will reap rewards in greater safety as a result of your Conference attendance.

"Is smoking permitted here?" asked the passenger.

"No," said the conductor.

"Well, where did all these cigarette butts come from?"

"From people who didn't ask questions."

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Also available as PV-98, 12" gauntlet

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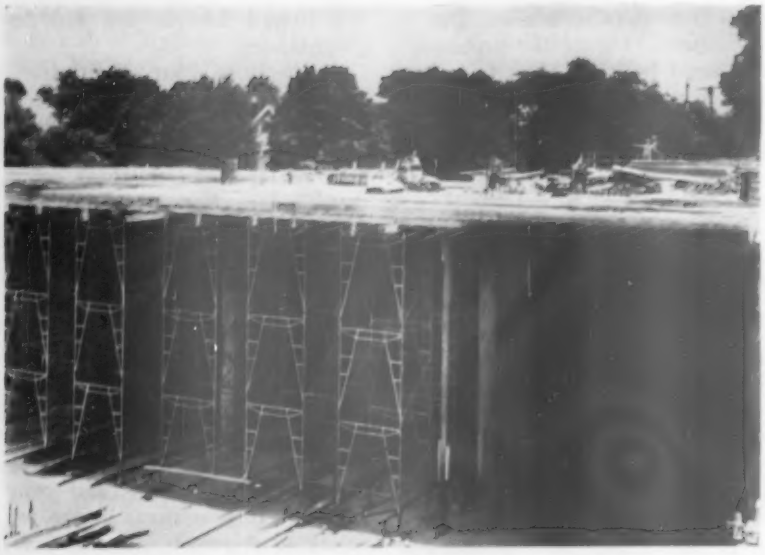

One shoring unit moved, two more ready to roll. Scaffold-shoring unit has been rolled to next position from bay on right. Two units at left are ready to be lowered on screw jacks and towed to new position. Similar rolling rigs were used to shore roof slab above.

Scaffold Shoring Units

IN ONE of the first applications where complete integral scaffold-shoring units were rolled on casters, contractor Mellon-Stuart Company used a new shoring technique developed by Universal Manufacturing Corp. This new method, using scaffold panels, eliminated the time-consuming operations of knocking-down and re-erecting individual shores, and also kept the forms usable and intact, with little rebuilding.

Similarity and height of bays and the size of this new Distribution Center building for Western Electric Company in Pittsburgh, Pa., permitted economical use of rolling scaffold-shoring. In laying the 250-ft. x 400-ft. ceiling over the first floor, each shoring unit was simplified by erecting three parallel 50-ft. runs, braced with gravity-lock mechanism which eliminated bolting and the need for special tools. These runs, equally spaced between columns, were tied together with pipe and clamps, supported a form area 50 ft. x 25 ft. which was poured with 8-ft square, 7½ inch drop heads on 25-ft. centers. The rigid shoring units were mounted on screw jacks to raise the forms to exact height of 22½ ft., carrying a total load of 195,000 pounds including estimated live load.

The unusual feature of this scaffold-shoring job was the addition of runners with 6-inch casters to the scaffold units, resulting in definite savings in the shoring operation. After the 8½ inch thick concrete slabs were poured and cured, the unit was lowered about 6 inches on the screw jacks, so that the casters then took the 22,000 pound rolling load of the scaffold-shoring and forms. The upper scaffold panels provided efficient work platforms for the stripping operation, and since the units had to be lowered only about 6 inches, ledgers, joists and forms were not damaged in stripping. This resulted in the complete re-use of form material and kept rebuilding to a minimum.

The scaffold-shoring units on casters, were then towed by tractor to the next bay for pouring with the forms intact.

The only operation then required was to raise the units by adjustment of the same screw jacks. In this manner four pours were made with just one shoring and forming installation.

Study Effects of Electricity on Heart

Effects of electric shock on the heart and a description of how electric current can be used to restore heart action after such shock, were described at the Winter General Meeting of the American Institute of Electrical Engineers in New York.

Approximately 100 electric utility employees die each year as the result of accidental contact with electric circuits, it was pointed out. For years the only accepted first aid for such victims was artificial respiration, although it has been known for more than half a century that alternating current can arrest fibrillation of an animal's heart.

Because of the importance of the problem in the electric utility field, Edison Electric Institute provided funds for a study of the possibility of a method of defibrillation of the human heart without opening the chest. The study was undertaken by Johns Hopkins University, with its Schools of Engineering and Medicine and its Hospital participating. Fibrillation was described as a twitching movement of the heart caused by electric current. In this state the heart does not pump blood through the body.

In a report on this study, W. B. Kouwenkoven, dean of the school of engineering, and W. R. Milnor of the University staff, reported that experiments on animals disclosed that the best method found for defibrillation was the single application of 60-cycle alternating current lasting approximately one second, with the current flowing through the chest in the direction of head to foot. The capacitor method was found to be unsatisfactory because of its ineffectiveness after the heart has been in fibrillation for more than 30 seconds, and serial defibrillation, that is current applied over a period of time, was found dangerous to the human heart.

The two researchers pointed out that the use of electric current to stop fibrillation due to surgery has been used for several years, but the method requires exposure of the heart.

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Let fire get a foothold, and a going concern is *gone*. Don't risk it. Install a Kidde Automatic CO_2 Fire Extinguishing System, and fire won't stand a chance.

A Kidde System goes into action at the first sign of fire—releases clouds of CO_2 over the blaze, smothers fire almost as soon as it starts. And CO_2 leaves no mess to clean up later. It puts out the fire, then vanishes.

Protect flammable liquids, dip tanks, spray booths with a Kidde System.

Let Kidde guard record vaults, machinery and electrical equipment.

And for on-the-spot protection, get Kidde portables. When fire strikes, just aim the horn, pull the trigger, and *swoosh!* No more fire.

Don't wait 'til your business is a cinder pile—Contact Kidde today.

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SAFETY FILMS

For further information on publications or films listed here, write Nancy Lou Blitzen, Film Consultant, Membership Service Bureau, National Safety Council

Psychology of Safety

Left to Live (35mm sound slidefilm) Black & white. 15 minutes. Production date, 1954. A highly dramatic story about a young wife and her two children after the death of her husband in an accident. The time covered is a period of about 20 years. The story points out the responsibility of every man to take care of himself and be safe for the sake of his family.

Source and availability basis: Local Zurich Insurance agents. To locate, if unknown, write Zurich Insurance Companies, 135 S. La Salle Street, Chicago 3—loan, purchase.

Logging

The First Season (16mm sound motion) color. 10 minutes. Production date, 1954. This is an indoctrination film for the new logger. It tells of living and working in pulpwood camps; stresses the value of training and instruction, and gives reasons for safe work practices.

Source and availability basis: Ontario Pulp & Paper Makers' Safety Association, 90 Harbour Street, Toronto 1, Ontario, Canada—purchase (cleared for entry under educational importation).

The Spring Drive (16mm sound motion) color. 10 minutes. Production date, 1954. Another indoctrination film for the new logger. Shows the safety precautions necessary in river-driving operations. Also gives instructions for these operations.

Source and availability basis: Ontario Pulp & Paper Makers' Safety Association, 90 Harbour Street, Toronto 1, Ontario, Canada—purchase (cleared for entry under educational importation).

Safe Cutting and Piling (16mm sound motion) color. 11 minutes. Production date, 1954. This film deals with the hazards involved in felling, limbing, bucking and piling pulpwood when using axes, swede saws and wood-hooks. For the new logger.

Source and availability basis: Ontario Pulp & Paper Makers' Safety Association, 90 Harbour Street, Toronto 1, Ontario, Canada—purchase (cleared for entry under educational importation).

Petroleum

Beneath the Flames (16mm sound motion) color. 20 minutes. Production date, 1954. The film shows how oil tank fires are controlled or extinguished by injecting air or other gas into the lower part of a tank through pipes which are already standard equipment on most such tanks. It shows how the air (or gas) rises to the surface, taking with it cooler product from the lower part of the tank. As the cooler product spreads over the surface, it cuts down vapors on which the fire feeds. Film pictures a roaring fire in a tank containing 2,000,000 gallons of fuel oil snuffed out by this process in two minutes.

Source and availability basis: Socony-Vacuum Oil Company, 26 Broadway, New York 4—loan, purchase.

The 1954 issue of the *National Directory of Safety Films* is still available for purchase from the Council. The price of 75c for a single copy includes the two available quarterly Supplements.

Film Contest Deadline February 28

ENTRY BLANKS have been placed in the mail for the 1955 contest conducted by the National Committee on Films for Safety. This annual contest will include motion pictures and sound slidefilms produced or released during 1954, in the fields of occupational, traffic and transportation, home, and general safety.

Suitable awards are given to sponsors of outstanding films in each classification, as determined by the committee judges. There is no charge to contestants for entries.

Contest entries must be received by February 28, 1955, at the headquarters of the National Committee on Films for Safety, 5th floor, 425 North Michigan Ave., Chicago 11. Address William Englander, secretary, for contest forms or further information.

Wider Backing For Mass. Conference

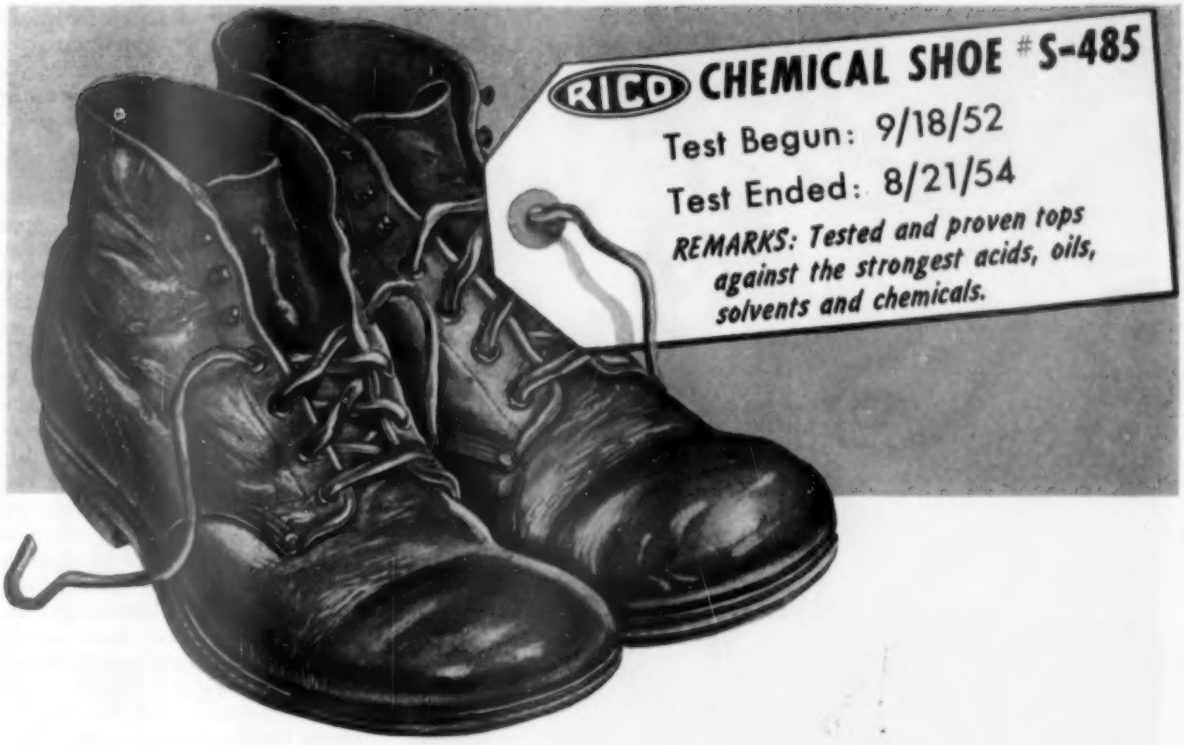
Pointed up by a series of the most complete traffic engineering surveys yet accomplished in large cities and by new services to industrial members, the 34th annual Safety Conference of the Massachusetts Safety Council will be held in Boston March 21 and 22 at the Hotel Statler.

Assisting at the Conference, for the first time since its inception, will be the safety councils which serve the state together with the Massachusetts Safety Council. The Worcester County Safety Council and the Safety Council of Western Massachusetts will send delegates to the Conference and are aiding in committee work.

Bruce Campbell, manager of the Massachusetts Safety Council and a member of the Institute of Traffic Engineers, has termed the Conference "a giant forward step in disseminating new information on automobile accident prevention based on recent accident studies achieved by the Council in six major Massachusetts cities."

Added efforts in plant protection and new services offered by the Massachusetts Safety Council will be featured at industrial meetings. Nearly 30 special session and two luncheon meetings will present nationally recognized authorities as speakers.

Speaker at the Governor's Highway Luncheon on the second day of the Conference will be Honorable Christian A. Herter, Governor of Massachusetts. Meeting in connection with the Conference will be the New England Section of the Institute of Traffic Engineers.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Meet the Safety Shoes they couldn't Wear Out!

Seeing is believing! These Chemical Steel Toe Safety Shoes were worn, day after day, for more than 23 months, in one of America's largest Industrial Chemical Plants*.

Look at the condition! Still good for more wear, don't you think?

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RICO chemical shoes have special Oil Treated, Burgundy Upper Leather and feature DU PONT REG. U.S. PAT. OFF. Miracle Fiber DACRON Stitching and Pure Neoprene Soles and Heels.

*This Industrial Plant (Name furnished on request) told us that never had a Safety Shoe designed for their purpose ever lasted over several months regardless of price. After using several thousand RICO pairs, only 2 pairs were returned for replacement.

NATURALLY, WE ARE PROUD TO BE THE FIRST TO DEVELOP A CHEMICAL SAFETY SHOE THAT OUTLASTS MANY TIMES OVER, OTHER SHOES BUILT FOR THIS PURPOSE!

You owe it to your employees, for the good of SAFETY, COMFORT and ECONOMY to give these shoes a trial in your plant. ***Order Today!***

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Room Air Cleaner Finds Industrial Uses

A SMALL, portable machine which removes more than 99 per cent of all smoke, dust, pollen, and even some types of bacteria from the air in a room, is surprising its makers by creating a market for itself in unexpected places.

The room air cleaner was developed by Raytheon Manufacturing Company for the relief of sufferers from hay fever, asthma, and other allergies. But the business world has been taking notice of the device, too—and the Waltham, Mass., electronics firm now finds its new product in growing demand by industry, in applications where a dust-free atmosphere is needed.

In telephone switch-and-frame rooms, where row upon row of delicate relays keep the dial systems working, dust is an ever-present problem. A speck or two of dust on the contact points, and a circuit may be put out of order. The "Micronaire" unit has been found to keep these rooms virtually dust free, and greatly adds to the reliability of telephone service while cutting down maintenance costs.

Factories where fine painting, lacquering, and finishing are done have been placing orders for room air cleaners. One maker of lacquered dials for instruments finds that his rejection rate has dropped to 40 per cent of its former figure. The vacuum tube industry has recently discovered the advantages of using the device, and Raytheon's own plants, which are producers of electronic tubes, were among the first to install the machines.

The cleaner is an electrostatic precipitator. It traps airborne particles by a form of magnetic attraction, rather than by the more common and less effective principle of mechanical filtering. Thus, particles of matter which are measured in microns (millionths of an inch), and which would pass right through an ordinary filter, are trapped by the charged metal plates of the new machine. These plates are easily removed and washed under a faucet when the dust on them becomes too thick.

Manufacturers of fine electrical contacts, photoengravers, film cutting rooms, and photographic processing laboratories, and optical manufacturers are finding that the quality of their work is increased and the amount of work necessary for many jobs is decreased through electrostatic air cleaners. Lint and dust specks caused by airborne materials are eliminated.

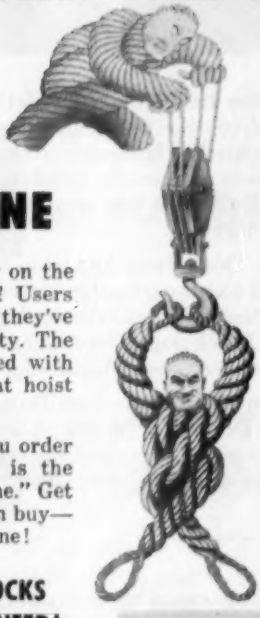
Bacteriologists find that the airborne transfer of the microorganisms with which they work is a constant problem. Even microscopic bacteria are trapped and collected by the Micronaire unit. One government tuberculosis laboratory reported particularly dramatic results. In a room 8 by 10 by 8 feet, which was to be kept free of tubercular bacteria, it was common to find two or three colonies per hour deposited on a glass slide. In the two weeks following the placing of a machine in the room, only one colony was deposited on the slide.

The recent episode of radioactive dust injuring Japanese fishermen has pointed up the hazards connected with atomic radiation. The nuclear research laboratories and plants where this hazard is present, utilize the powerful collecting action of electrostatic air cleaners which effectively removes radiation particles from the air.

One of the greatest applications lies in the business world, where smoke and stale air in conference rooms and offices has long been a source of annoyance, headaches, and generally lowered efficiency of employees. The machine can be wheeled into such areas, plugged into any handy wall outlet, and put to work immediately.

NOW!
TORTURE-TEST a Tuffy® SLING FREE!

Run Your Toughest Tests! Prove Tuffy's Toughness Yourself!



Tuffy® HOIST LINE

Equals Tuffy Slings in ability to stay on the job longer . . . reduce operating costs! Users report Tuffy Hoist Line is the best they've ever seen for strength and wearability. The reason? Tuffy is specially constructed with the extra flexibility and stamina that hoist line work *demands.*

No Confusing Specifications! When you order Tuffy, all you tell your distributor is the length, diameter and "Tuffy Hoist Line." Get all the hoisting service your money can buy—reeve *your* crane with Tuffy Hoist Line!

YOUR Tuffy® DISTRIBUTOR STOCKS THE REPLACEMENT ROPES YOU NEED!

Just Give Him An Idea of your future requirements and he will stock up from his nearby Union Wire mill depot. That way, when you need rope in a hurry, he's ready to rush it to you immediately! Talk over your replacement schedule with your Tuffy distributor *today.*

Kink It, Loop It, Jerk It! Tie knots in your free Tuffy Sling or use it to hoist weights up to *twice* the rated working load! Do your worst to the Tuffy Sling we give you and you'll see why we say Tuffy is the toughest sling you can buy!

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A Congress Headliner of 1952

ON THE PROGRAM of the Annual Meeting of the 1952 National Safety Congress was a personable high school girl from South Sioux City, Neb. As a leader in 4-H Club and other activities in her community, she had been chosen for a spot on the program previously filled by women prominent in American public life. How well she acquitted herself is remembered by those attending the meeting.

Now a student at the University of Nebraska, Doris Jean Anderson is engaged in a strenuous program of studies and extra-curricular activities. She leads a Girl Scout troop and is working on a local citizenship project under the auspices of the Educational Psychology Department. She is a member of the Y.W.C.A. and the Women's Athletic Association.

When the Nebraska football team went down to Miami to face Duke in the Orange Bowl game on New Year's Day Doris (left in the above group) was a cheerleader. That Duke won, was no reflection on the cheering section. "No alibis," says Doris, "Duke had a great team."

David Arm to Head NSC Industrial Dept.

DAVID L. ARM, dean of the School of Engineering at the University of Delaware, has been appointed manager of the Industrial Department of the National Safety Council.

In announcing the appointment, Ned H. Dearborn, Council president, said, "The need for industrial accident prevention led to the formation of the Council, and the development and administration of our occupational safety services for nearly 5,000 industrial members with more than 9,000,000 employees requires outstanding leadership.

"That is why the Council is fortunate to obtain the services of a man so eminently qualified, both in technical knowledge and the ability to put it into practical action, to head its activities in the industrial safety field."

Mr. Arm became dean of the School of Engineering at the University of Delaware in 1946 after extensive teaching and administrative experience at three other colleges.

He spent four years with Ingersoll-Rand Company and a short time with Pennsylvania Power and Light Company. During World War II he served as liaison officer for the state of Iowa with the Chicago Ordnance District. He engaged in a survey of the state's production facilities and helped place contracts.

Mr. Arm has served in a consulting capacity for a number of industrial organizations and for the U. S. Navy. He was selected as the first engineering college administrative officer to participate in the "Year of Industry" program of DuPont.

Before becoming dean at the University of Delaware, he directed the Mechanical Engineering Department at Iowa State College, taught engineering and served as director of personnel at

David Arm

Purdue University, and taught at Lafayette College, where he received his own degrees.

He was born in Easton, Pa., in 1904. He is a member of the American Society of Mechanical Engineers, American Society for Engineering Education, and National Society of Professional Engineers.

three new FIRST AID SAFETYGRAPHS

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HOW TO CONTROL BLEEDING

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PERSONALS

Announce NSC Staff Changes

GEORGE C. STEWART, General Manager of the National Safety Council, has announced the following changes in the Council's staff, effective January 1, 1955:

R. L. FORNEY, Secretary of the Council, has been assigned additional duties as Assistant General Manager for Services, and Comptroller. Mr. Forney has been on the Council's staff since 1927, having previously served as Director of the Statistics Division, and of the Industrial Department.

W. G. JOHNSON, Manager of the Membership Department since 1946, was named Assistant General Manager for Programs. Mr. Johnson has been with the Council since 1937, having formerly served as Director of the Statistics Division, and of the Program Department.

DUANE PICKERELL, a staff member since 1946, and Assistant Manager of the Membership Department since 1948, was named Manager of the Membership Department.

H. W. CHAMPLIN was named Assistant Manager of the Membership Department, and will continue as Director of the Advertising and Exhibits Division, which was made a division of the Membership Department. Mr. Champlin has been on the staff since 1948 and formerly served as Director of Membership Service Extension.

WENDELL BLAIR has been named staff representative of the National Safety Council's Construction Section, coming to the Council from the Zurich-American Insurance Companies, where he was construction safety engineer.

Mr. Blair has been engaged in construction and safety work for 25 years. While employed by construction firms, he gradually moved into safety activities, first with Standard-White-Midwest Paving Contractors and later as safety engineer for the Aluminum Company of America at the McCook, Ill., rolling mills. He became safety director when Reynolds Aluminum Company took over the mills.

ERNEST R. KRAUSE has been appointed safety supervisor at the Crucible, Pa., coal mine of Crucible Steel Company of America. He succeeds WILLIAM E. HART who has retired after 24 years' service with the company. Mr. Krause assumes his new duties after having served as assistant mine foreman. He has been associated with Crucible mining activities since 1936.

MICHAEL H. PRENDERGAST, New York State's new Director of Safety, has assumed his duties in Albany, succeeding Thomas W. Ryan, former head of the Division of Safety. As head of the State's Safety Division, he will direct the coordinating of the state fire training and fire mutual aid programs, police training and mobilization, state civil defense Rescue School, and the state employee safety program covering 80,000 workers.

In order to assume his new duties, Mr. Prendergast has resigned his position in New York City with War Relief Services, National Catholic Welfare Conference, with which he has been associated for more than 11 years.

PERCY A. SIGLER retired from the staff of the National Bureau of Standards on November 30, after 32 years of Government service, 26 of which were spent at the Bureau. Mr. Sigler is widely known in both Government and industry for his work on flooring materials.

During his career, Mr. Sigler has devised instruments for use in flooring research. Best known of these is the Sigler Pendulum-Impact Slipperiness Tester. This tester has been generally accepted as the standard instrument for measuring the dynamic coefficient of friction of floor surfaces. He developed methods of test and instruments for evaluating flooring materials, and a series of publications on "Measurement of the Slipperiness of Walkway Surfaces" and "Performance Tests of Floor Coverings for use in Low-Cost Housing Construction."

RICHARD ROCHE has been appointed personnel director for the Cambridge Wire Cloth Company, Cambridge, Md. For the past 14 years he has been associated with the company in a number of capacities, including safety director, supervisor of inventory and receiving, and supervisor of the first-aid department.

JAMES W. GRIFFITH has been appointed safety director for Riegel Paper Corporation operating four mills in New Jersey. Mr. Griffith was formerly plant protection officer. He succeeds WILLIAM M. GILLINGHAM who has been promoted to assistant personnel director.

L. P. HOWARD, recently supervising safety engineer for Standard Accident Insurance Company, Chicago, has joined the Arabian American Oil Company as safety engineer on the company's operations in Saudi Arabia. He will be located at Ras Hanura on the Persian Gulf.

Mr. Howard is a member of the Western Pennsylvania Chapter of the American Society of Safety Engineers, having served with Dravo Corp., Pittsburgh. He is a graduate of the University of Michigan with a degree of B.S. in Aeronautical Engineering.

ALBERT E. SCHMEISER, veteran safety official for the Public Service Company of Northern Illinois in its Fox Valley area, was honored recently by associates at a retirement dinner where the presentation of a letter of appreciation from Ned H. Dearborn, president of the National Safety Council, and a Distinguished Service plaque from the Greater Chicago Safety Council highlighted the evening's program. Among those present at the dinner honoring Schmeiser was Hugh A. Ptolemy, Public Service safety supervisor who retired three years ago.

Safety Training—100 Per Cent

(From page 25)

Attendance must be voluntary. Use of pressure by company officials or union officials does not achieve satisfactory results. Safety can be promoted only by good will and friendly teamwork among company officials, union officials, and employees.

Careful planning and arrangements should be made before classes begin. It is better to be a little slow in starting a class than to commence without complete preparations. Haphazard preparations usually result in dismal failure.

As a rule, the top company official should be contacted to obtain his endorsement. If the official is interested, the instructor should arrange for a preliminary meeting with all mine and local union officials.

Since the key personnel should be at the special meeting, the attendance will be unsatisfactory if called on a mine workday; therefore, an instructor should plan to hold the meeting on an idle day. This is an important meeting. The instructor should be prepared to present facts that are convincing and show why accident-prevention training for miners and officials is essential. He should have tabulated statistics showing the results achieved where other mines have had 100 per cent of their employees trained.

It is very important at this meeting to place emphasis on the development of friendliness and good fellowship between employees and officials. The instructor must stress the point that safety is everybody's job and that everyone should take it seriously and discuss it in the mine.

The Instructors

An instructor, to be capable, should have a wide range of mining experience. He should be familiar with the operation of mining equipment, roof control, haulage, electricity and its proper use and installation, mine ventilation, mine gases, coal dust and rock dusting. He should have completed the United States Bureau of Mines training in first aid, mine rescue, and the accident-prevention courses for miners and officials; he should have had experience in combating mine fires and conducting recovery work, and know how to barricade. He should have had some experience as a mine official and in handling men and be familiar with all details of blasting and handling explosives. He should have a thorough knowledge of the Federal Mine Safety Codes and the Federal Coal-Mine Safety Act.

An instructor should conduct the class in a serious vein and confine discussion to safety. He should respect the opinions and judgment of others, and he should be sure he knows the correct answer before he attempts to answer a question.

An instructor should be truthful, punctual, courteous, and friendly. He should be willing to work and to remain after classes to answer personal questions on safety and, above all, show a helpful attitude.

Conducting Classes

Teaching accident prevention courses is not an easy job, but the work is extremely gratifying when good results are obtained. Most mines work three shifts each day, and to do a good job in teaching and have 100 per cent of the employees attend the classes requires 3 classes each day; 4 classes are required at some mines. Best results in completing 100 per cent training of the employees and officials are obtained by conducting the ten two-hour classes in ten consecutive days, two hours each day, either before the men enter the mine at the beginning of the shift or by holding the employees over two hours after the shift.

For the convenience of the men, the classes should be held in a suitable building near the mine entrances. Some companies have portable buildings, suitable for the number of men attending. These buildings are moved from one mine to another as the classes are completed.

At the first class, the instructor should give a well-prepared, spirited, inspiring talk on safety. He should explain the purpose of the course, how it will be conducted, and the subjects it will cover.

It is absolutely essential during the first class that the instructor make the students feel at ease. They should be informed that there will not be any homework or examinations and all that will be necessary is that they attend every class and arrive on time.

Experience has proved that the size of a class does not matter as long as the classroom is large enough to accommodate everyone and is well lighted, heated, and ventilated. Teaching is so planned that if a student can hear and see he will acquire as much knowledge in a large class as in a small one. It has been found that a large class is often better; more interesting discussions with a wide variance of ideas and opinions will be the rule.

The instructor must be careful not to offend anyone by using profanity, obscenity, or bizarre stories, nor should he enter into controversial discussions not related to the training. An instructor will have before him company representatives, union officials, and employees who have many different opinions and ideas. He should stress the point that he is interested only in safety and that the Bureau of Mines is serving both management and employees.

Sometimes an instructor may have to make a comment that may sound a little prejudicial to management or employees, but it must be only for the purpose of illustrating a point which is important in the promotion of safety.

The instructor should always remember that there are expert mining men in the class; he cannot bluff his way through.

Discussions are stimulating, but the instructor should know the difference between discussion and argument. If an argument ensues he should be diplomatic enough to change the subject smoothly. Otherwise, hard feelings may develop, and they do not provide a wholesome class atmosphere.

The instructor should tell his students what the next class program will be. He should give a

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brief presentation to stimulate interest so that they will be sure to attend the next class and be eager to hear the discussions or see the demonstrations or movies.

The instructor should have his lessons and demonstrations well prepared and be able to lecture without books or notes. Students have no use for instructors who read to them from books, or instructors who have to look through books or papers to find the answer when a question is asked.

An instructor should not guess. If he is not certain, he should note the question and discuss it at the next class. If an instructor is not well prepared or thorough, the students will soon discover this, and it will result in faltering attendance. This can be overcome if the instructor will acknowledge to himself that some of the men are better informed about the subject than he and that he had better be correct in his teaching.

What the Course Teaches

The more miners that are trained in preventing accidents, the less need there will be for first aid and mine rescue.

Teaching must be done in a manner that is understood by the miners and officials.

The whole course is based on getting men to think and become safety conscious, thus avoiding risks that result in accidents.

Miners who work in coal mines for many years are well experienced in their occupations, but some are inclined to take chances. From the method of lecturing and providing the numerous visual aids dealing with safety during the ten two-hour sessions, the students are made to realize that they must stop taking chances and become safer workmen.

Table I lists the subjects covered in the courses.

Visual Aids

United States Bureau of Mines films, most of which are on safety, are major interest-retention aids. The pictures are realistic and easy to understand. Projector slides and film strips, desk-size explosion galleries, mine maps, and a variety of homemade exhibits are used. The use of blackboard sketches and diagrams to show the causes of major accidents occurring in all phases of mining are also utilized. Virtually all types of equipment and instruments necessary for mine safety and inspection work in and about the mines are demonstrated, and their detailed operations are explained.

Refresher Course

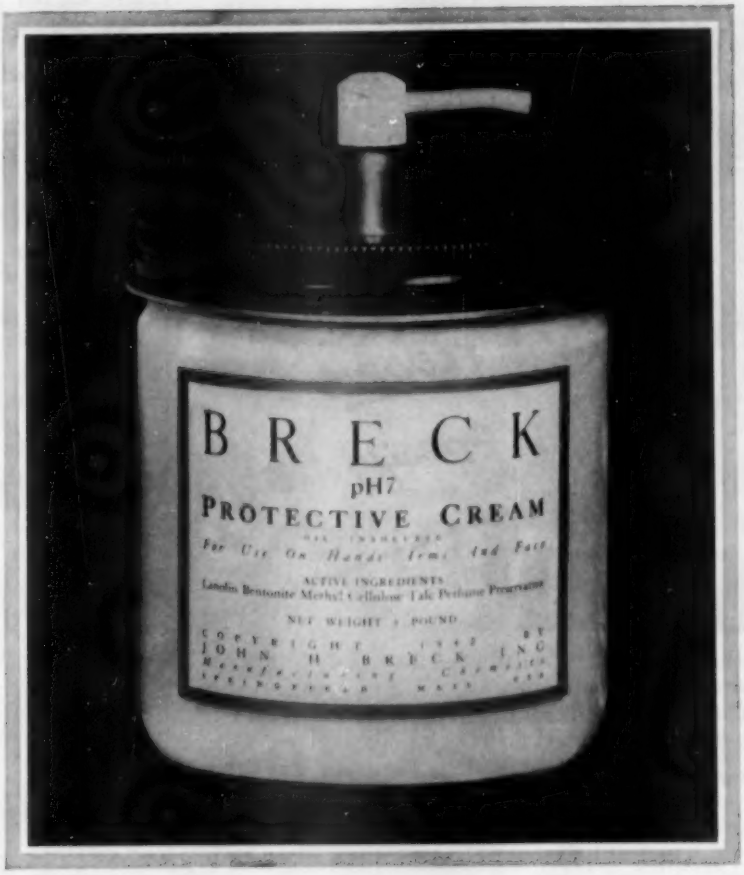
When the 20-hour course is completed, the instructor should return after four months for a two-hour session with each shift, showing a new movie and giving a lecture on safety. This has proved most valuable in keeping the miners safety conscious, and it keeps the safety spirit high.

Results Achieved

One of the largest mines trained 100 per cent thus far was the Inland Steel Co. mine, Wheelright, Ky. This achievement was outstanding, especially considering that many of the workers had long distances to travel to the mine (anywhere from 20 to 60 miles one way from their homes). Training of the 1,361 employees

TABLE I—SCHEDULE OF CLASSES

Class No.	Subject	Motion Picture
1	Introduction	Story of Bituminous Coal
2	Coal dust, rock dusting and demonstration of coal dust explosions	Shuttle-Car Fatalities
3	Haulage	Motorman and Brakeman
4	Barricading	Explosions and Mine Fires
5	Roof falls and roof bolting	Roof Bolting
6	Ventilation, gases, and flame safety lamps	Modern Mining
7	Arcs and sparks—gas explosions	Mining in Foreign Countries
8	Explosives and blasting	New Method of Artificial Respiration
9	Electricity	Diesel Locomotive
10	Miscellaneous	Story of the Bureau of Mines



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A Breck Industrial Preparations Booklet will be forwarded to you upon request.

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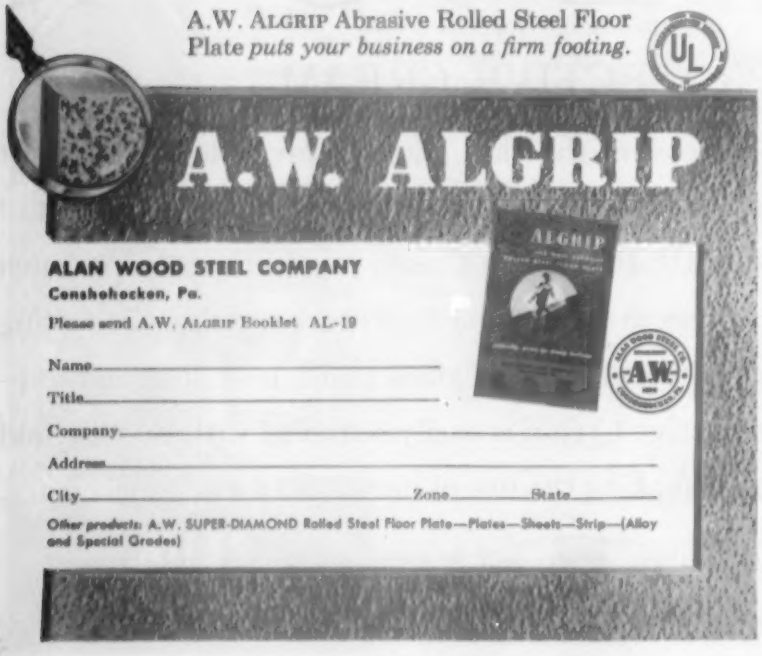

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was started in August 1952 and completed in November 1952. The remarkable results achieved at this operation are indicated by the following table showing the accident history for 1953 compared with 1952:

	1952	1953
Number of lost-time accidents	50	22
Fatal accidents	1	0
Frequency rate	24.63	9.72
Severity rate	5.38	3.48
Tons of coal per lost-time accident	23,314	65,768

The Consolidation Coal Co. (Ky.) completed 100 per cent training of its three mines, employing 1,076 men in April 1953. Here again the accident frequency rate achieved after the program was the best in the history of the company. In a short period the accident-frequency rate was reduced from 45.80 to 5.60 and the production was increased from 15,000 tons to 100,000 per lost-time accident.

The Mathies mine, Mathies Coal Co., Finleyville, Pa., employing 881 men, six months after completion of the course, reduced the accident-frequency rate from 22.01 to 13.68 and the severity rate from 2.42 to 1.02.

The Pittsburgh Coal Co., Pittsburgh, Pa., after training all employees of its mines and cleaning plants, totaling 1,396 employees, reduced the accident-frequency rate in 4 months from 17.59 to 11.42.

The United States Steel Corp., Coal Division (Frick District of Pennsylvania), which operates 9 mines at the present, has had 7 of their mines, employing 2,964 men, trained 100 per cent. The accident-frequency rate had been reduced in four months from 11.0 to 9.4.

The United States Steel Corp. is planning to train the remaining 3,600 employees at its Bridgeport and Robena mines. The Robena mine is the largest mine in the world, employing about 2,800 men.

Accident-prevention training is now underway at the Bridgeport mine (780 men) and training at the Robena mine is scheduled to be started by February 1955.

The author has, within 3½ years, conducted 100 per cent

—To page 113

The story of the world's hardest working river —and a new venture— in Wausau, Wisconsin

Wausau Story

by **ROY C. INGERSOLL,**
President, the Borg-Warner Corporation

..."at heart, a source of tremendous power"...

"I STOOD there on the banks of the river ...the *Wisconsin*. Just a few miles back it is quiet and peaceful, supplying pleasure for northern fishermen. But around a bend or two it becomes, as they say, the world's hardest working river, supplying power for all Wausau industry.

"I couldn't help thinking that Wausau is like its river. Outwardly serene. But, at heart, a source of tremendous power.

At Borg-Warner's Wausau plant . . . Mr. Ingersoll, Plant Manager Zimmer (left) and J. H. Ingersoll. (Back) John Papa

"Our company recently established in Wausau a new plant which makes turrets for amphibious tanks. Why Wausau? Its location is part of it, of course. There aren't many places where you can look out of a factory window and see deer munching grass in a deer grove across the way!

"But there is something else in Wausau we like even more, Wausau *people*. People who come to work *expecting* to stay until the job is finished. People who, to make our venture a success, worked overtime, even when all the equipment wasn't there. You hear about the American way of business. It's folks like those in Wausau—businessmen and workmen—who make it that way. Good people to have working for you. Good people to do business with."

Employers Mutuals of Wausau are "good people to do business with"

Mr. Ingersoll tells of a "Wausau personality"—people who go out of their way to do a job right. You'll find this spirit very much in evidence in talking with the folks of Employers Mutuals in any of our 89 offices.

Our specialty is **workmens' compensation** insurance. Here, particularly, you'll appreciate the "Wausau way." It means a claim service unexcelled for speed and fairness. And an accident prevention program that can reduce not only your insurance costs but operating costs as well. In every case you deal *directly* with our field people.

Talk it over with a Wausau man. We write all lines of fire and casualty insurance—including, of course, automobile. Phone our local office, or write to us in Wausau.

Employers Mutuals *of* Wausau

Automation

From page 23

mation devices are designed to move parts into and out of production machines, turn the part over, rotate it, remove scrap and chips and perform other related functions. These devices are interlocked with the process and are ordinarily completely automatic while in operation.

A finished piece of automation equipment is made up largely of standard elements such as conveyors, air, hydraulic and electrical control mechanisms arranged to obtain the proper movement for elimination of unnecessary manual handling operations.

A wide variety of materials can be handled with the elimination of hazardous handling such as in large stamping, heat treat operations, forging operations and others. In many respects automation is the extended usage of conveyors which played an important part in the development of mass production of automobiles.

By introducing a series of electric nerve-centers to direct the work, engineers have gone beyond the use of control buttons, for the most part, as a method of plant operation. Now switches located in the automation are principally operated by the weight of the work units.

Electric nerve-centers direct the products by mechanical arms and fingers, from one point to another in much the same manner that a policeman or traffic light directs traffic.

A particular nerve center receives hundreds of bits of information continuously from electric switches acting as lookouts. It compiles the data, makes the best possible decision as to course of action, then turns on the power to put the machinery to work.

One lookout may inform the brain that a particular machine is ready to go to work, another that work is available and another that steel arms and fingers are in position to move the work into the machine.

When all conditions are correct, the brain sets the process in motion. Then it concentrates on removing the work from the machine, transferring it to another and prepares to repeat the operation.

To evaluate fairly the effect that automation is having on the safety of our employees, we must consider what it accomplishes in the elimination of well-known accident causes found in the non-automated type of operation. With regard to the latter, particular reference is made to single operation machines where there is a need for manual handling of heavy stock in the loading, positioning and unloading of the machine and the transfer of stock from one operation to another.

As safety men, we are all aware of the fact that stock handling, especially that which is heavy by nature, is an important contributor to industrial injuries. It is well-known that a very high percentage of serious foot injuries are the result of heavy stock falling from a transfer truck. It is further a fact that the handling of stock is a prolific cause of industrial hernias and injuries to the back.

Now, let us see what automation has done to minimize these accident causes. You will recall that, in many instances, after the initial loading of the stock into a series of in-line machines, a multiplicity of operations are performed without the need for any manual stock handling whatsoever.

By comparison with former methods of single operation machines, it is obvious that the hazards associated with manual handling of stock into and out of a machine and transferring it to the next operation are almost eliminated. By the same reasoning the hernias and back injuries directly related to heavy lifting are greatly minimized, if not eliminated.

Our experience indicates an 85.5 per cent reduction in the number of hernias in similar operations with the advent of automation. We believe that automation has taken the back break and the "foot break" out of engine manufacturing.

Every safety man dreams of the

This Sign Gets Around

TRAVELING SAFETY SIGNS are being used in the Campbell and Brier Hill plants of The Youngstown Sheet and Tube Company at Youngstown, Ohio. Diesel locomotives which operate in all parts of the two plants carry such messages as:

"Help Us to Help You For Safety of All."
"Treat Yourself to the Best—Safety is Best."
"Stop, Look, Listen and Live."
"Help Us to Help You Be Partners in Safety."
"Think First—Make Safety First."

Identical signs appear on each side of the locomotive, but each locomotive has a different set of signs. Joseph F. Collins is safety supervisor in the company's Youngstown district plants.

Saves Trip to Doctor
"Telephone call to doctor about child's inflamed eye saved 2 hours and trip to doctor's office in bad weather."
Saves Pure-bred Cow
Telephone call brought veterinarian in a hurry. "Without it," says farmer's wife, "I would have lost a pure-bred cow."
Saves $35 Deposit
"My telephone call to a vacation resort to change reservation on apartment saved the $35 deposit I would have lost."
Saves $10 on Children's Coats
"The telephone helped me save $10 by taking advantage of a sale. I couldn't have left the children to go downtown."

How much Time and Money does the Telephone save for YOU?

A little while ago we left a questionnaire with some housewives and asked them to record the many ways the telephone helps them save time and money. Just a few of hundreds of answers are printed above.

It's true that the telephone saves far more than it costs. But its day-by-day value goes beyond time and money. It serves in so many other ways . . . in friendship, happiness and peace of mind.

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Reminding you that someone, somewhere, would like to hear your voice today

Fyr-Fyter's NEW PRESSURIZED 5-POUND DRY CHEMICAL EXTINGUISHER

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Just point it at the fire . . . and press your thumb! Instantly, Fyr-Fyter's new specially designed nozzle spreads the fire-killing chemical powder in a flat, dense, 10 to 12 foot long, and 60° wide angle stream. This thick, blanket-like stream lays a flat pattern of powder level with the base of the fire. It covers a greater area, provides better heat-shielding for the operator and faster flame smothering action!

It's a rugged, lightweight, all-brass extinguisher that's *always ready for action!* A unique, leak-proof valve positively holds air or nitrogen pressure charge . . . visual gage constantly shows pressure condition. Simplified design and construction makes it easy to inspect, clean and recharge. Except after use, recharging is never necessary . . . only periodic visual inspection is required. A service station air chuck can be used for pressurizing.

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DEPT. 20 FF-6

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perfect mechanical operation where the employee need not at any time expose himself to the working parts of a machine. Most of the serious injuries to hands and fingers are the result of the operator exposing himself to the closing or working parts of a machine in the process of loading or unloading it.

This problem has been solved to a degree in the single operation method by the application of indexing fixtures, sliding dies and the use of tongs. However, at its best you are faced with the problem of enforcing the use of these provided devices. While automation has not completely solved this important problem, it is a real step in the right direction since it completely eliminates the need for repetitive exposure to the point of operation.

We recognize, however, that because of the relationship of one automated operation to another, it is highly important that a breakdown or machine failure be quickly corrected. This condition could result in the repairman inadvertently exposing himself to working parts of the equipment.

However, we have been able to solve this problem with a high degree of success by invoking our safety policy of long standing which provides that before working on a piece of moving machinery the repairman must completely de-energize the equipment by placing his personally issued padlock on the power source. So, with regard to hand and fingers injuries, we see in automation the possibility of almost complete elimination of this problem.

I am sure you are wondering what happens when a piece of stock gets out of position in its travel through a given sequence of operations. To avoid the need for the operator reaching into the equipment to reposition the stock, "push" or positioning sticks are provided at convenient locations for this purpose.

The very nature of automation dictates the generous use of stiles or cross-overs for the convenience and safety of employees in traveling from one location to another. These stiles are strategically located throughout the plant. They are not only important in terms of

normal travel but serve an important purpose in the emergency evacuation of the plant.

Our engineers and safety personnel are constantly alert to the improvement of the design of our machines as it relates to the safety of employees. Their thinking has been passed along to our machine tool builders who have incorporated it into the design and construction of machines being built for our plants.

In many instances, the representatives of these companies came to our plants and consulted with our engineers and safety personnel, and in other instances, our representatives visited the machine tool builder's plant and advised him of our needs and requirements with regard to mechanical safety.

The net result of this relationship has been a thorough understanding on the part of our machine tool builders of our program to engineer the mechanical hazards out of the job. While we recognize that there will, undoubtedly, be a continuing need for the guarding of mechanical hazards, we firmly believe that great progress is being made in simplifying the problem by reason of our close relationship with the people who build our machines.

Our experience with the complexity of automation has contributed greatly to the decreasing need to add guarding to machines after they are delivered to us. We are rapidly approaching the time when, from a safety standpoint, a machine will be ready to run the moment it is set on the floor.

As evidence of this fact, I am advised by our safety personnel that the machines we are receiving for a new plant in Cleveland are coming in almost completely guarded. It is important to note that a very minimum amount of additional guarding will have to be applied to them. We believe this is significant since our standard in this regard is very high.

You may gather that the automation of industrial processes represents a completely new approach to the subject of employee safety. I assure you that this is not the case. It is a fact that the same old principles, so well-

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Why not take a walk through your plant right now (and be careful!) to see how many places where Ferrox surfacing would reduce your accident risk. Machine areas, especially, need Ferrox for safe footing. So do stairways, walkways and ramps, shower stalls, washrooms, loading platforms and numerous other locations. Remember—slips are costly, but Ferrox isn't. Write to Dept. 21 for Ferrox bulletin.

AB 121

AMERICAN ABRASIVE FERROX

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known, still apply as they did in the single operation processes. Our best friends in this regard still are:

1. Engineer the hazard out of the job.
2. Guard the hazard.
3. Educate the personnel.

We have dwelled pretty much on the first two principles so I would like to explore our approach to principle number three —educate the personnel.

We recognize that in safety, as in all other aspects of our job, there is no substitute for a well trained and informed employee. A typical approach to this principle is exemplified in our Cleveland plants by the following training program for employees:

Safety is included in the induction of newly hired hourly personnel by the hourly personnel section.

Personal indoctrination is given employees by safety unit representatives.

They are routed through our safety shoe store where safety shoes and spectacles are emphasized.

General safety rules are issued in a package.

Foreman's induction check-off list requires coverage of safety as one item.

A check-off list issued by safety itemizes the coverage by the foreman and when complete the form is submitted to safety for filing.

On the job a follow-up by the foreman and the safety engineer is initiated.

Bulletins of unusual or new accident causes are distributed to all employees, in some cases; in others, only to supervisors.

A series of five-minute safety talks are given by supervision periodically to their hourly-rated personnel.

While representatives of safety have an important part in the training of our employees, the basic responsibility rests with our foremen. To better equip these members of management to meet this responsibility, we conduct regular safety training conferences with them. This is an organized program designed to make every foreman safety director of his department.

We see a definite trend toward longer accident-free periods through automation.

Build Them Yourself

—From page 42

shop, the cost is apt to be fairly high.

The "do-it-yourself" movement, familiar to every householder, is growing in the construction of machine guards, and kits are now available to simplify the work. They require only hand tools, such as a hack saw, screw driver, hand snips and hammer. For most installations a good shop maintenance man can build them on the spot without drawings. The maintenance man can be counted on to provide for easy accessibility, and in cooperation with the safety man and the operator will usually produce a design that will give protection with minimum interference with production.

The build-it-yourself material includes:

1. Steel sheets, 22 gauge, 36 x 120 inches, perforated with ½ inch holes providing 47 per cent open area.

2. Steel angles 20 feet long, 1 x 1 x ⅛ inches, also 1½ x 1½ x $\frac{3}{16}$ inches, perforated and ready for assembly.

3. Steel bands ⅛ by 1 inch, also $\frac{3}{16}$ x 1½ inches, perforated to match the angles.

4. Corner gussets perforated to match the angles and bands and so provide the means of frame work assembly.

5. Floor posts and matching sockets to be used for floor mounting of finished guards.

6. Slotted steel strips for individual punch press die guards.

Of course, not every guarding problem is simple, but a very large proportion of them can be taken care of with these materials and ordinary hand tools. The finished guards, if properly designed and assembled, are strong and rugged and will readily obtain the safety inspector's O.K.

The large open area provides good visibility and ventilation. Smooth surfaces are easy to keep clean. And the cost, in both labor and materials, is moderate.

If you're wrong you can't afford to argue; if you're right you don't need to.

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Suggestion Program

—From page 58

through cold cash plus the satisfaction of individual recognition. Moreover, it is a frequent occurrence that a man, in preparing a safety suggestion, will also develop a better method of procedure for increased production.

In paying out cash awards for suggestions, the company must bear in mind that awards are valuable as incentives, for even the smallest cash award is a boost to ego. There is something about the idea of actually earning money for suggestions that carries a psychological appeal for the worker. In regarding this aspect, we must in addition give serious thought to the advisability of paying out cash awards to our employees, as compared against the inadvisability of paying workmen's compensation for accidents. Let us weigh this issue.

Cost per accident has been estimated at approximately $369. This cost, of course, varies with states, since Workmen's Compensation is higher in some states. In Crucible Steel Company, studies show that the average compensation cost per injury is $494. Now, in comparing the cost of accidents with the layout for awards, consider that our average award for a safety suggestion is $12.

It is folly to assume, of course, that the suggestion system can carry the entire burden of motivation, but it shoulders about 90 per cent of it, in my estimation. And in order to do its share and do it well, there is the matter of administration. The well-administered system opens up an effective, personal road to our objective of interesting employees in accident prevention because it:

1. Provides direct contact with the employee
2. Stimulates creative thought
3. Recognizes his ideas
4. Assures prompt and fair processing of his suggestions

The well-administered system also uses an evaluation system which gives fair consideration to each suggestion in determining awards. We have arrived at a satisfactory method of evaluating approved safety suggestions. We consider each safety suggestion for:

1. Likelihood of accident
2. Exposure frequency
3. Possible extent of loss due to the accident
4. Extent of application
5. Effectiveness of suggestion

We find that many good safety ideas are lost because the suggested safe practices are not placed in effect within a reasonable period of time.

For example, a large corporation with an excellent safety record reports that some employees were in the habit of taking a hazardous short-cut over the tops of cable cars, rather than walking around them. A suggester submitted a safety idea for fitting the tops of the cars with a strong grill. The suggestion was investigated, adopted and a work order issued for installation of the grill. But each time the job was scheduled, the production supervisor refused to release the cars. He said, "Production is more important than the possibility of a minor accident."

Ten months after adoption of the suggestion, a worker made a misstep while crossing a car, fell and broke two fingers. Six months after that another fell and broke his wrist. Only then did the production supervisor release the car for installation of the safety grill.

What I have brought out here sums up my belief that so long as we persist in our efforts to save life and limb we will need the ideas and suggestions for safety improvements of the men who actually work in the plants with machinery under hazardous conditions.

I also contend that we have in our supervisory forces, and also in our workmen, a reservoir of safety ideas which will put us way ahead on the road to prevention of industrial accidents. If this sounds over-confident to you, let me again remind you of the early beginnings of the American industrial dynasty. Confidence in our own ideas and the ability to effectuate them has been the means of our growth and development in this country.

We are satisfied in Crucible that the suggestion system is an essential tool in procuring suggestions for the improvement of our safety experience, and has proved vital to the welfare of our company.

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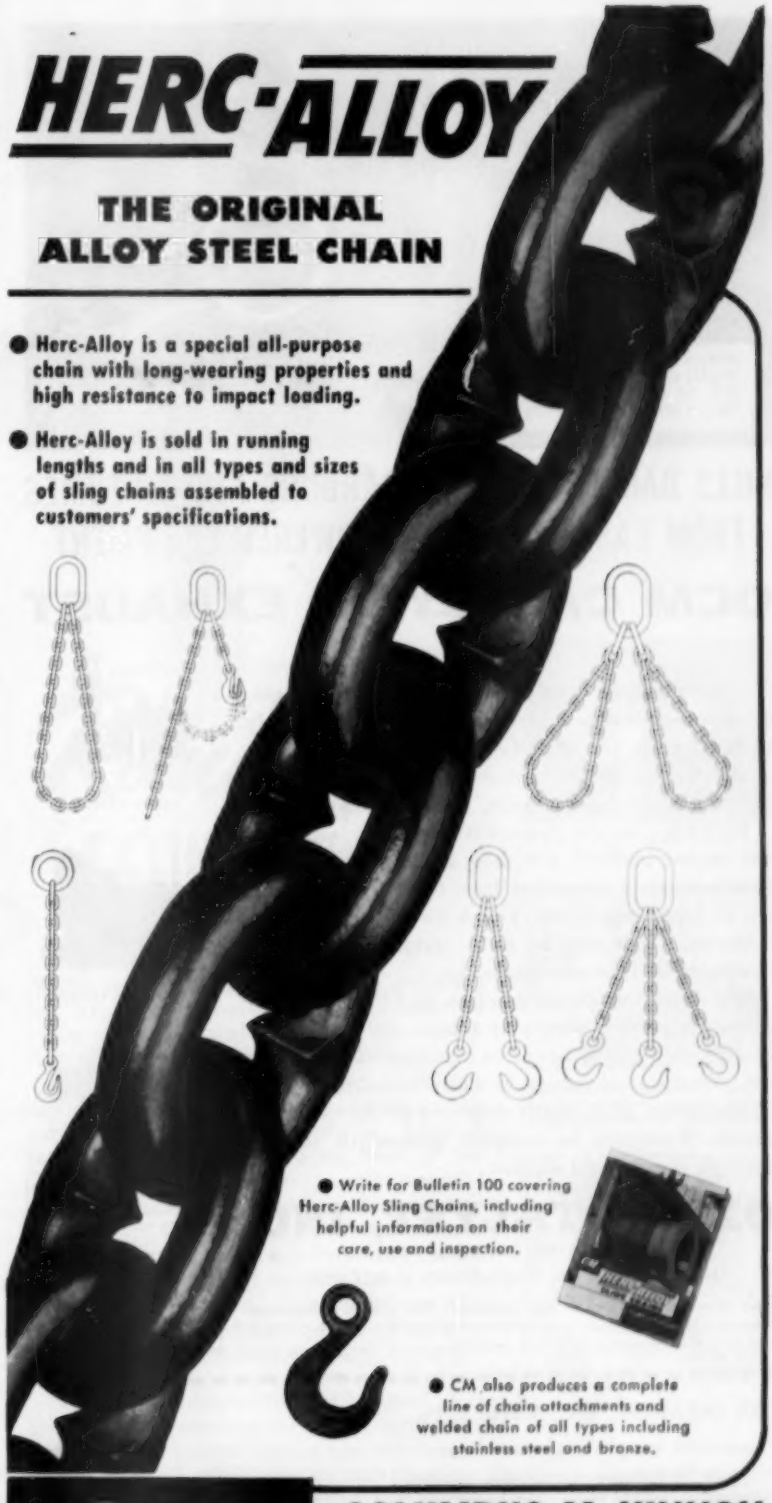

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The OCM Catalytic Exhaust is made to replace standard engine mufflers. It's now available as optional factory-installed equipment from leading manufacturers, such as Buda, Clark, Yale & Towne, and Lincoln-Schlueter. Or it can be easily installed on present equipment by your own mechanics.

Wherever you operate gasoline- or LP gas-powered engines indoors — even part time — the OCM Catalytic Exhaust means an end to fume-caused headaches, eye irritation, and nausea. It means more efficient use of equipment, plus greater employee productivity and morale. Write now for complete information and the name of your nearest supplier.

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Hearing Is Worth Saving

—From page 27

tiates an audiogram card. The card has been developed at Lockheed. It contains the following information: identification of the subject; detailed history of previous noise exposure, both in industry and military service; presence of any infectious disorder which might conceivably have produced a nerve damage; any previous disease of the conduction system of the ear; disorders of the structures immediately adjacent to the ear and eustachian tube; past and current use of drugs; history of noise irritability; results of a visual and otoscopic examination by the nurse; audiometric findings in decibels for 8 frequencies from 500 to 8,000 cycles per second, and bilateral hearing loss in percentage for the 4 conversational frequencies from 500 to 4,000 cycles per second determined in accordance with the American Medical Association method.

A sweep check audiogram is performed on all new hires with the audiometer set at plus 10 decibels. If a defect in hearing in excess of the sweep check level at any frequency is noted, a true threshold test is performed.

Results of the test are used by the nurse to classify the applicant's hearing in accordance with a system developed by the Lockheed Medical Department in 1951. The audiograms are then reviewed by a single responsible physician who has over-all charge of the program and is usually a skilled otologist, or one with special knowledge in auditory diseases and hearing problems.

It has been our feeling at Lockheed that audiograms should be used for two basic purposes; first, to provide an accurate record of the employee's auditory history and findings at the time of initial hire, and second, to serve as a means for selective placement of employees in positions compatible with their hearing acuity and ear stability. The arbitrary standards developed at Lockheed classify the employee into one of four categories:

1. Those considered to be capable of working in any noisy area of the plant.

2. Those restricted from working in areas where noise levels are above 85 decibels.

3. Applicants who have lost their hearing and may work in noisy areas, but who should not be exposed to jobs where loss of hearing would constitute a hazard.

4. Applicants with moderately severe hearing loss and nerve damage which precludes their placement in noisy areas and whose hearing loss is sufficiently great to interfere with reception of warning signals; consequently, where loss of hearing would constitute a hazard in certain jobs.

It has been found that all of our applicants may be classified in one of these four categories. A detailed study of more than 15,000 applicants and their audiometric records during an eighteen month employment period is being performed, and a report of our experiences with our classification system will soon be published by our Medical Department.

Once an applicant has been accepted for employment in a noisy job, his audiometric record is returned to the audio section for filing. Based upon the original findings, the employee is re-examined at regular intervals as outlined in our standards and procedures. Employees with normal hearing are re-checked at six month intervals; those with questionable findings, at one month, and a very few borderline cases, at one week intervals. It has been our experience that in an industry such as ours, and assuming good acceptance of an ear protection program, routine six month re-examinations are adequate for persons with normal hearing.

In addition to the performance of the audiometric tests, the industrial audiometric technicians are responsible for the basic indoctrination of the employees into the need for hearing protection, and through tactful explanation, suggestions, posters and demonstrations, attempt to sell the hearing program to the newly hired employee. The degree of acceptance of ear protectors under these circumstances is understandably high and approximately 65 to 75 per cent of employees will respond favorably.

Re-examination of employees is accomplished by recall from the audio section. Re-checks are conducted in the audio testing section

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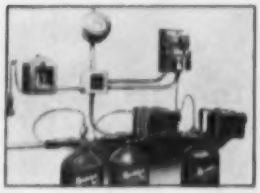

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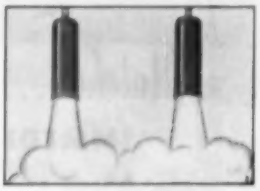

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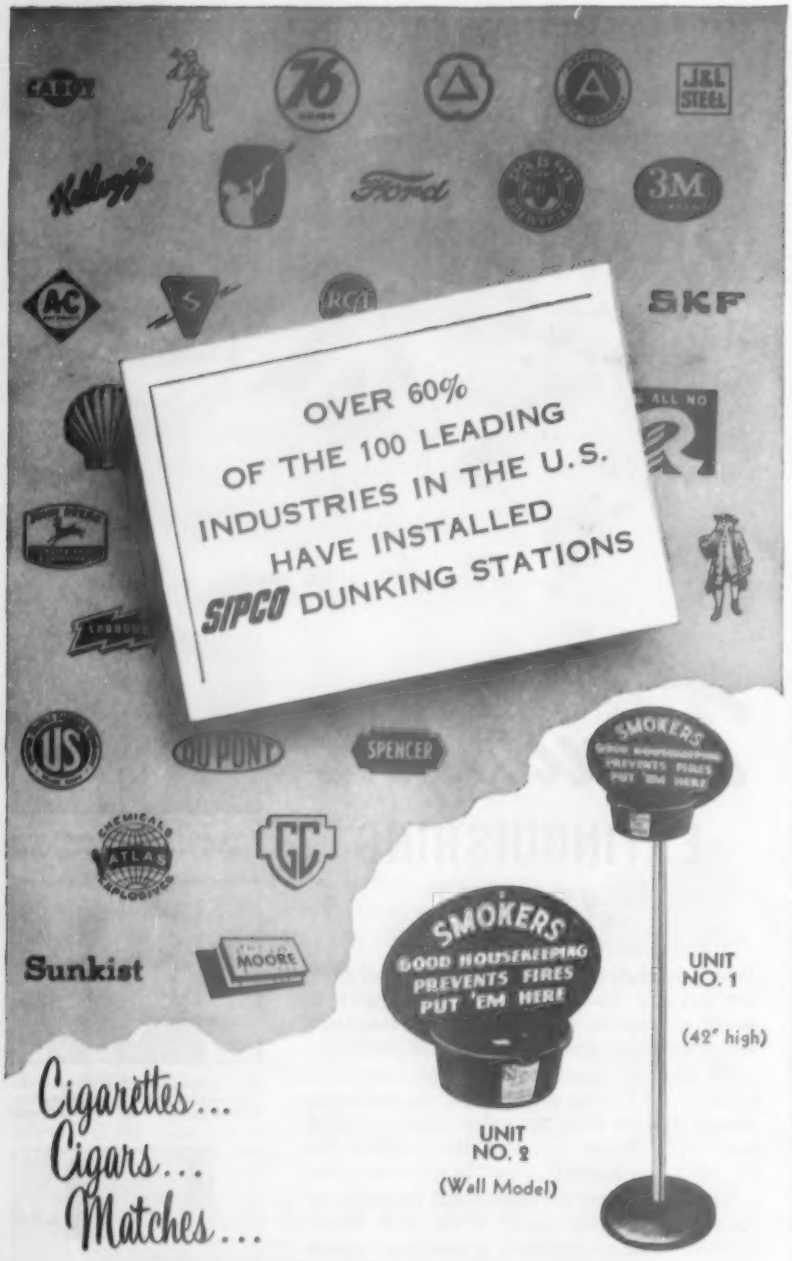
Send for Randolph's free FIRE HAZARD INDEX recommending the correct equipment for protection against any of the 580 typical fire hazards that might exist on your premises. Randolph's System Engineering Service is also available without cost or obligation. Write today: Randolph Laboratories, Inc., 2 E. Kinzie St., Chicago 11, Ill.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IMMEDIATELY EXTINGUISHED!
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It's not the cigarette or cigar that's being smoked that causes fires — it's after they're discarded and forgotten that they become a serious fire hazard! SIPCO DUNKING STATIONS end this fire hazard by immediately drowning every last dangerous spark.
Why not rid your plant of smoldering fire hazards by installing SIPCO DUNKING STATIONS. They are built for heavy industrial use and abuse — are attractive — economical — the perfect solution to your plant smoking problem.
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or in special sound-treated rooms in other plant areas. The sound level in the booth under testing conditions is approximately 45 decibels. An interval history is obtained with emphasis upon complaints referable to the auditory apparatus and intervening diseases. The audiogram is then compared with the pre-employment record and any decibel or percentage change noted.

Where a significant change has occurred as outlined by our standards, employees are referred to our otologist for a definitive evaluation and disposition. The employee may be counselled concerning proper use of ear protectors; his supervisor may be notified of the need for careful observation of the employee; the physician may request more frequent audiometric re-checks at specific times of the day or week; the employee may be temporarily, or occasionally, permanently removed from a noisy area or job.

In all cases, extreme tact is exercised by the examining physician and the technician. Should it become necessary to transfer an employee from a noisy job, the Personnel Department is contacted and every possible attempt made to find the employee a position comparable in grade to his previous job.

Several types of ear protectors are used at Lockheed. Those having the highest degree of employee acceptance are wax impregnated cotton, which provide moderate attenuation in the lower frequencies and approximately 35 decibels of attenuation in the middle and higher frequencies. Synthetic rubber inserts are also worn and may be used for a number of months, as compared to the wax plugs, which are replaced daily.

Ear muffs are frequently used by our flight line personnel and provide satisfactory attenuation in the higher frequencies with a much lesser degree of attenuation in the lower frequencies. Employees subjected to noise levels in excess of 130 decibels are required to wear both insert type plugs and ear muffs. Under these circumstances, ear protection can be provided in noise fields up to

140 decibels. Personnel exposed to noise in excess of this level should be rotated out of noisy areas at fairly frequent intervals.

In some instances it is impossible to induce workmen to use ear protectors. Under these circumstances it obviously would be extremely desirable to develop a predictive test which would identify those persons most likely to sustain ear damage as a result of high level noise exposure. Numerous efforts to develop a practical predictive test have been attempted, but without appreciable success. In the absence of such a test it becomes extremely important to use the findings of the pre-employment audiogram for the selective placement of employees and the elimination of those with evidence of previous and severe nerve damage.

There is a possibility that once a nerve has been significantly damaged by acoustic trauma, a progression of hearing loss will ensue upon further exposure. It is extremely important under these circumstances to examine employees at regular intervals to ascertain the effect of noise upon their ears, especially those who can't or won't wear protectors.

In addition to the routine periodic rechecks, supervisors are encouraged to refer employees with ear or noise complaints at any time to the audio section. Employees with ear disease, noise irritability and other allied complaints are thus frequently seen by the audio nurses at irregular intervals. An audiometric examination is performed in every case and the employee and his record referred to the otologist.

In many cases, simple measures such as removal of ear wax, reassurance, or instruction in the proper use of ear protectors, will correct the disorder. Not infrequently, external or middle ear disease is detected and the employee is advised to consult his private physician.

Occasionally complaints are directly referable to noise exposure, in which case the basic recommendation for disposition is made by the physician. If hearing changes are noted, the employee

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will be observed at more frequent intervals and his progress followed through serial audiograms. In all such cases the employee's immediate supervisor is notified and enforces the use of ear protectors or cooperates in assigning the employee to a less noisy job, if possible.

Where a significant loss of hearing has occurred or may be anticipated, reclassification and reassignment of the employee is recommended. Those cases involving older employees are handled by a single physician who, of course, must exercise extreme tact in his contact with the employee.

The Safety Department at Lockheed constantly surveys the various plants to determine the degree of acceptance of ear protectors and the effort of supervision in carrying out the Medical and Safety Departments' policies. The special problem cases are called to the attention of the Safety Department. They make it their job to check the environmental work conditions and ascertain the use of ear protectors.

The Nurse's Role

I would like to stress the role of the industrial nurse in a hearing conservation program. It has been our policy to employ only registered nurses as industrial audiometric technicians. We prefer to employ nurses who have had some experience in industrial nursing, as they have a better understanding of industrial jobs and noise levels, medical department and company practices and policies, and workman's compensation laws.

We have employed as many as five nurses in our audio section during the past three years, all of whom, with the exception of the chief audiometrist, have been limited to audiometry. Each nurse received extensive training from the chief audiometrist and in addition, completed at least one academic course in audiology and audiometry. We are fortunate in the Southern California area in having such courses presented during the evening hours by three major universities.

With the large number of peo-

ple to be tested, it is important that the nurses work rapidly and accurately. The "sweep check" method is employed on all pre-employment examinations. The technicians must conduct the test carefully and be alert for those who misunderstand instructions and the relatively few who deliberately attempt to manipulate the results. We feel that a good history cannot be obtained and an accurate test accomplished in less than 7 or 8 minutes. A technician is never required to perform more than 40 complete tests a day.

Educating the employee is another important duty of the audiometrist. The nurse uses diagrams of the ear to illustrate the principle of ear protection and stresses the necessity for preventing nerve fatigue. Posters reproduced in color are distributed to all medical units and Safety Department bulletin boards. They are eye appealing and effective.

The establishment of standards for interpretation and classification of audiograms has been of tremendous help to our audiometrists in effecting efficient operation of the program. It provides a continuous self perpetuating hearing program regardless of the medical personnel currently employed. It establishes the basis for frequency of recheck examinations; thus, when the audiograms are returned to the audio section, the exact date of recall is immediately apparent and the cards so identified and filed.

An effective hearing conservation program is a rather costly procedure; however, we feel that the program has been justified both in benefits derived by the company, and in the protection afforded our employees. We recommend it as a standard procedure in every industrial health program.

Industrial Health

—From page 52

of water to form chromes and extruding these chromes into a continuous rod of clay water paste. The wet clay rods when made up into columns for ion exchange were quite stable. Since the clay collects large amounts of radioactivity from the liquid, it is considered possible that after absorption of long lived fission products and firing, the clay rods might be satisfactory for sources for some types of industrial radiation applications. At any rate, they would be in a form permitting easy and relatively safe storage.

Industrial Wastes

Significance of Industrial Wastes, by Richard D. Hoak, Senior Fellow, Mellon Institute, presented at the 19th annual meeting of the Industrial Hygiene Foundation, November 18, 1954.

INDUSTRIAL WASTES should comprise residual substances of no value which result from manufacturing operations. There have been some instances in which by-products have been recovered from wastes, but in spite of the publicity given these processes, they are unusual and are apt to remain unusual.

The waste water may result in pollution of the stream if it has been in contact with manufac-

Use this fine safety film, "SAFE EXIT," in your safety program at school, plant or club meeting. Dramatically filmed and edited by the makers of VON DUPRIN Fire and Panic Exit Devices, "Safe Exit" is a public service film devoted to the promotion of safety education . . . and offered to you *absolutely free*. It is in no sense a product story.

"SAFE EXIT" is a 20-minute, 16 mm, black and white sound movie, ideal for use in any safety training program for children or adults or for informal luncheon club or PTA meetings.

It costs you nothing to show "SAFE EXIT"—not even postage! Just fill in and mail the booking coupon request below. Send it today . . . help promote safety all year long.

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YES, we wish to show the 16 mm, sound, B & W movie, "SAFE EXIT."

Date desired ..... or .....

Type of audience .....

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We understand film is absolutely rent-free, postage paid. We agree to return film the day following our showing.

Organization .....

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City ..... Zone ..... State .....

tured products or simply raise the temperature if it has simply been used for cooling. Simply raising the temperature of the receiving stream may be a significant form of pollution.

It is now generally recognized that provisions must be made for setting maximum pollutional loadings on any receiving body of water. This can generally be done specifically for any particular stream but seldom can it be done in general terms.

One of the most persuasive reasons for industry to be studying pollution control at the present time is the rapidly increasing use of surface water which is already producing shortages in the west and a few in the east so that conservation and re-use of industrial water is going to become more and more an economic necessity in the future.

Because of the number of these situations, industry is spending a large amount of money for pollution control research. It is probable that an industrial waste foundation could carry on the basic research to considerable advantage for all industry without attempting to encroach upon the specific individual problems of application of the basic scientific data to the specific problem of controlling the pollution of any specific stream.

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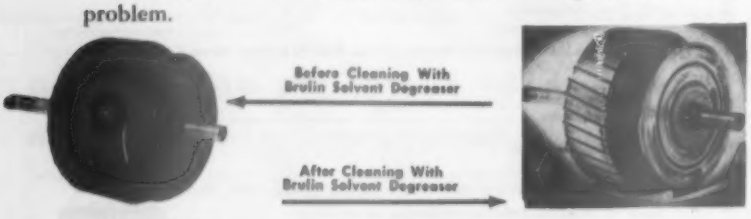

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Age and Diet

Food Usage and Food Habits of Older Workers, by Charlotte M. Young, Gordon F. Streib and Betty Jean Greer. AMA Archives of Industrial Hygiene and Occupational Medicine 10:501-511 (December, 1954).

THIS IS A REPORT on the study of the food usages and food habits of 1,640 employees of 230 different companies in 21 major industrial and occupational categories throughout the United States. All of the 1,539 men and 101 women were 64 years of age. Participation in the study was voluntary.

Each of the individuals recorded all food and drink consumed over a 24 hour period on diet forms which were distributed with printed instructions for keeping of the record after the participants had filled out a detailed sociological questionnaire. They recorded their food intake for any day of the week since the day of the week of record appears to be immaterial by previous studies.

In addition to evaluation of the adequacy of the diet in terms of milk intake, ascorbic acid, vitamin A, proteins, and overall adequacy on the basis of the sum of the individual items, the records were examined for food habits such as missing of meals, between meals eating and the type of meal patterns.

Sixty-two per cent of the older workers had an intake of less than two cups of milk per day. This is a common inadequacy in the diets of industrial workers and their intake was almost identical with that of several other younger worker groups who have been studied before.

The protein intakes of 40 per cent of the male workers and 51

per cent of the female workers were less than adequate. This probably relates to the poor milk usage rather than to poor intake of meat, fish or poultry.

In the use of fruits and vegetables high in ascorbic acid, the older workers had a more adequate diet than did the younger workers who had been previously studied. The intake of the women was better than that of the men in this class of foods.

It appears that the food habits of the older workers have not deteriorated and that they are at least no worse than those of the younger workers who have been studied before.

Only ten per cent of the men and seven per cent of the women studied received an overall rating as having an adequate diet.

Two-thirds of the workers ate between meals and only three per cent of the men and five per cent of the women missed any meal during the day recorded.

The relationship between dietary habits and income and education also was very interesting since the dietary adequacy was related much more closely to education than it was to income.

The authors again draw the conclusion that the major needs in the diets of industrial workers are increased use of milk and its products and of fruits and vegetables, particularly citrus fruits, tomatoes, and green, leafy and yellow vegetables.

Physical Examinations

Re-evaluating the Physical Examination in Industry, by M. N. Newquist, M.D., presented at the 19th annual meeting of the Industrial Hygiene Foundation, November 17, 1954.

THE FUNDAMENTAL PURPOSE of pre-employment physical examination is to determine whether or not the employee's physical status is compatible with the intended job. This implies that the medical examiner will know the requirements for the job. As by-products of the examination, the examiner may discover and point out to the applicant correctable or controllable defects and detect any communicable diseases which may exist. He also will provide a base line for future study of the applicant's health. All of these things are of value to both applicant and employer.

The number of plants using preplacement physical examinations continuously increases. According to the National Industrial Conference Board, about 90 per cent of all plants with 1,000 or more employees have them and only slightly less than one half of the plants with 250 or less employees have them.

A study of the value of pre-employment examination is indicated in an article on "Hernias and Serious Injuries in Maritime Commission Shipyards" by Dr. Charles M. McGill. In this study, five shipyards with pre-employment physical examinations were compared with a similar group without examinations. Each group averaged 100,000 or more employees. The average loss ratios

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CORBIN P65-R Padlocks are *made especially* for safety purposes. Solid die cast case; 2¾" shackle; attached metal identification tag. Disc tumbler mechanism has 200 regular key changes or up to 700 changes when so required. Can be keyed alike or master-keyed.

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DIVISION
THE AMERICAN HARDWARE CORPORATION • New Britain, Conn.

for the control yards was about 50 per cent higher than those of the yards showing examinations over a three year period. The average numbers of serious injuries are about three times as high in the yards without physical examinations.

This certainly indicates that the examinations are of definite value to the employer and to the employee who is the individual injured.

It is rather common to not have examinations for temporary employees who work for 30 days to two or three months. By working for a number of months, some of these employees will automatically become permanent, which tends to circumvent the purpose of the examination.

Rules on periodic physical examinations are not as standardized as they are on pre-placement. Generally, they are voluntary, but voluntary examinations usually are not popular unless there is a substantial amount of persuasion and pressure.

There is room for question as to what constitutes an adequate and what constitutes a minimum physical examination. Certainly, an important part of any examination is the history and most industrial examinations do not allot sufficient time for history taking to get the maximum benefit out of this feature. In addition to a good history, a minimum examination should probably include the age, height and weight, general appearance, skin, eyes and vision, ears and hearing examination, examination of teeth and oral cavity, lungs and heart, abdomen, including hernia, anal region, genitalia in the male, spine and extremities for defects and limitations of motion, blood pressure and urinalysis.

Probably one of the worst features of such examinations is the use of the word negative in the recording of findings when all that can really be indicated is that no abnormalities were found at this particular time.

A good many companies are now having periodic examinations for executives given by a hospital or clinic group outside the plant. If such examinations are worthwhile, they should be offered to all employees from the watchman at the gate to the board chairman. Where a medical department is available in the plant, it should probably be either used for examinations of all employees or not used for any. If the procedure is different for hourly employees and executives, it is apt to undermine the confidence of the employee in the company's medical service.

The benefits of periodic examination will be achieved most readily if the results are discussed with the individual examined and if he is advised as to any action which should be taken.

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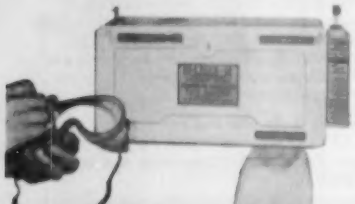

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WHAT'S NEW IN NATIONAL SAFETY COUNCIL SERVICES

Hospital Safety

The new *Hospital Safety Manual*, a joint publication of the American Hospital Association and the National Safety Council, is prepared for the use of hospital administrators and department heads.

Its purpose is to help in the prevention of injury and occupational disease to persons and damage to property through accidents and fire in hospitals and institutions.

The book stresses principles and methods of fire and accident prevention. The *Hospital Safety Manual* is illustrated with numerous drawings throughout its 116 pages. It has a durable cardboard cover printed in two colors.

The Manual is available at $2.00 per copy from the Council.

Operation Safety

"Check your car, check accidents!"

This slogan sums up the purpose and the action of the annual vehicle check program sponsored by the Inter-Industry Highway Safety Committee, *Look* Magazine, and the National Safety Council which will be conducted in May.

Three hundred cities are participating in this national program, and if your city is one, you may be called upon to help. The help your local safety group may ask of you is of two kinds.

They may ask you to do your utmost to see that your employees have their cars safety checked. You can do this by distributing leaflets, displaying posters, running articles in plant publications, and showing movies at company gatherings. And you can give employees every opportunity to take their cars through the safety lanes by giving them time off for this purpose.

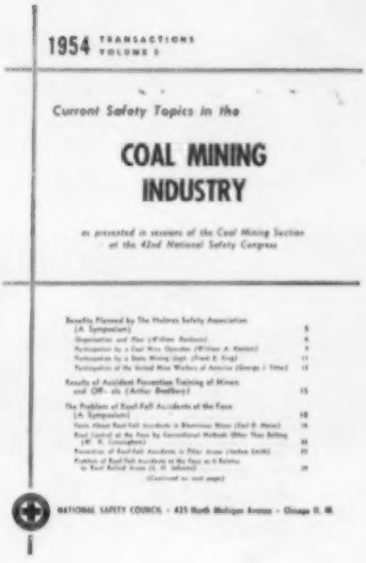
Everything you do to make your local program a success will, of course, help your own off-the-job safety effort. You will find sample leaflets, poster designs, program ideas and many other materials for publicizing the vehicle check program in the May Operation Safety kit.

Complete information on the Operation Safety program may be obtained by writing: Operation Safety, National Safety Council, 425 N. Michigan Avenue, Chicago 11, Illinois.

Congress Transactions

Most of the 30 volumes of the *Transactions* of the 1954 National Safety Congress are now in print.

For some years now, the sessions of the industrial sections have been published in individual volumes. This practice has been continued this year; however, in some cases related fields have been grouped together. For instance, the Aviation volume includes both the Aeronautical Industries and Air Transport meetings, the Metal Products volume includes the Automotive and Machine Shop sessions and those of the Power Press and Forging Section, and the Public Utilities and Electrical Equipment Sections have been grouped together.


1954 TRANSACTIONS VOLUME 2

Current Safety Topics in the

COAL MINING INDUSTRY

as presented in sessions of the Coal Mining Section at the 42nd National Safety Congress

NATIONAL SAFETY COUNCIL • 425 North Michigan Avenue • Chicago 11, Ill.

In the pages of the *Transactions* may be found new methods, new devices, answers to both old and new problems, and suggested improvements of some standard safety procedures. Here is the current thinking of the top safety men of the nation on all aspects of preventing accidents.

The volumes of the *Transactions* vary in price from 20 cents to 69 cents each depending on size. Prices to non-members are double.

Safety Banners

The Council's new banners, featured on the cover of this issue of the NEWS, are available on an annual subscription basis.

Twelve outdoor-type banners—one for each month of the year—are priced at $84.00. Constructed to withstand all kinds of weather, these banners come in extra heavy drill cloth with wind vents and stitched-in ropes.

The yearly subscription for the twelve indoor banners is $74.00. They are identical in message and design with the outdoor type but are of lighter construction. They come with grommets for easy hanging.

Other price information may be obtained on request.

* Look to this page each month for latest news about NSC services. Address requests for additional information, samples or prices to the Membership Department.

For a More Successful Poster Program

POSTERS miniatured on this and the following pages are NEW—produced and shown for the first time. Those illustrated in one color on the following two pages are actually printed in two or more colors.

For maximum variety, refer to the 1955 Directory of Occupational Safety Posters. There you'll find 744 top-notch selections on a great variety of subjects. Additional copies of the directory are 50 cents each—write Membership Service, N.S.C.

JUMBO POSTER FOR APRIL 1955

The Jumbo poster, issued monthly, is designed for outdoor use and is available to members on annual subscription but is not stocked. Its actual size is 9' 11" by 11' 8".

SAFETY BANNER FOR APRIL, 1955.

Here's the new monthly cloth banner service. Available in two types—indoor and outdoor—both are identical in size (10 feet long by 40 inches high), have the same general message and multi-colored design. Indoor type is of sturdy drill with grommets for easy hanging, while the outdoor banner is of extra heavy drill, with wind vents, and has strong stitched-in rope for durability.

A Clean Place is SAFER!

NATIONAL SAFETY COUNCIL

0250-A 8½x11½

This new four color poster is illustrative of the 72 four color posters shown in the 1955 Poster Directory.

Posters below are printed in two or more colors

(Available only in sizes indicated)

NATIONAL SAFETY COUNCIL

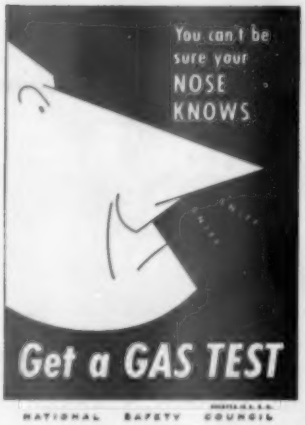
0414-C **25x38**

NATIONAL SAFETY COUNCIL

0308-B **17x23**

NATIONAL SAFETY COUNCIL

0383-A **8½x11½**



NATIONAL SAFETY COUNCIL

0382-A **8½x11½**

NATIONAL SAFETY COUNCIL

0361-A **8½x11½**

NATIONAL SAFETY COUNCIL

0384-A **8½x11½**

NATIONAL SAFETY COUNCIL

0356-A **8½x11½**

NATIONAL SAFETY COUNCIL

0379-B **17x23**

NATIONAL SAFETY COUNCIL

0246-A **8½x11½**

Electrotypes of payroll inserts can be furnished in all poster illustrations shown above.

Posters below are printed in two or more colors

(Available only in sizes indicated)

0390-A 8½x11½

0374-A 8½x11½

0351-B 17x23

0310-B 17x23

T-0366-B 17x23

T-0363-C 25x38
T-0364-A 8½x11½

V-0387-B 17x23

V-0389-B 17x23

V-0386-B 17x23

Electrotypes of payroll inserts can be furnished in all poster illustrations shown above.

There's more to salt tablets than meets the eye!

When ordering salt tablets for this summer **remember**, there are five distinct types of tablets and dozens of dispensers on the market. They are so highly specialized that there is a type of tablet and model of dispenser for virtually every need. For most effective results you must be certain to purchase the correct types for your plant.

The services of a highly trained StaSafe specialist is at your disposal, **without obligation**. He will bring to your office samples of all tablet variations and the more popular dispensers . . . discuss them with you . . . and give helpful suggestions on how you may better meet the torrid months to come.

Write in today for a "SALT CONFERENCE" with your StaSafe representative . . . his company makes all types of tablets. See them all before you buy.

STANDARD SAFETY EQUIPMENT COMPANY
232 WEST ONTARIO ST. CHICAGO 10, ILLINOIS
NEWARK 4, N. J. 597 BROADWAY
CLEVELAND 10, OHIO 855 EAST 152nd ST.
LOS ANGELES 16, CAL. 2952 CRENSHAW BLVD.

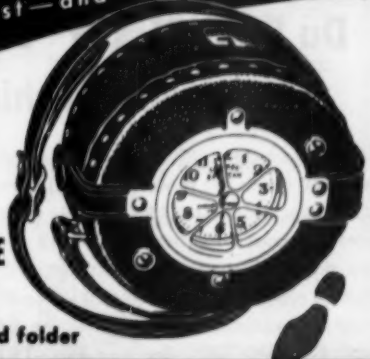
In the silence of the night

the watchman makes *his* rounds while the hands on his CHICAGO Watchclock make *their* rounds.

In the morning, there is a permanent dial-record of exactly where the watchman was during each hour...in the silence of the night.

The tamperproof CHICAGO Watchclock system is approved by both THE UNDERWRITERS' LABORATORIES and by THE FACTORY MUTUAL'S LABORATORIES. It gives extra protection against fire, theft and sabotage.

CHICAGO WATCHCLOCK
The first—and still the first



Quickly pays for itself... REDUCES INSURANCE RATES

Send for illustrated folder

CHICAGO WATCHCLOCK
DIV. GREAT LAKES INDUSTRIES, INC.
1524 S. WABASH AVE., CHICAGO 5, ILL.
OFFICES IN PRINCIPAL CITIES

Eye Protection

—*From page 55*

tion glasses. This made acceptance easier as it gave the program a professional touch and reduced the number of complaints due to improper fitting.

9. Those wearing prescription glasses were provided with a standard prescription form which they took to the eye doctor of their choice. The prescription was brought back to the plant nurse who forwarded it to the optical company through our purchasing agent. The completed order is sent by the optical company to the employee's doctor for fitting. The importance of proper fitting for both prescription and non-prescription safety glasses can scarcely be overemphasized.

10. All office personnel and visitors entering the production area were required to wear eye shields.

11. Employees were informed through bulletin board notices that non-compliance with the program would result in the standard disciplinary procedure of warning, time off and discharge.

12. Periodic meetings were held with supervision to discuss problems encountered in carrying out the program.

Through splendid cooperation by employees, supervision, the optometrists, and the optical company, the program which normally might take a year to become fully established — was in effect 100 per cent in about 90 days.

The result has been that eye injuries have practically disappeared in the plant, and our overall safety record has also improved greatly.

Du Pont PRO-TEK® keeps irritants from reaching the skin!

Morale goes up . . . "lost time" takes a drop when workers' hands are protected with Du Pont PRO-TEK hand cream. It's like invisible work gloves—goes on hands and arms before work . . . protects the skin against grease, dirt, paint and insoluble cutting oils. Afterward, a quick wash-up in ordinary soap and water rinses away irritating grime along with the PRO-TEK! See how PRO-TEK can increase efficiency and morale in your plant. Order from your supplier, or write E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

"Invisible gloves" guard hands against:

• GREASE • GRIME
• STAINS • PAINT
• OIL

DU PONT
REG. U.S. PAT. OFF.

Better Things for Better Living . . . through Chemistry

Wire from Washington

—*From page 10*

Under the authority stemming from the Federal Insecticide, Fungicide, and Rodenticide Act, the Department of Agriculture has amended and supplemented its regulatory interpretation with respect to warning, caution and antidote statement required to appear on labels of economic poisons.

Aviation

The Civil Aeronautics Board announced that 1954 set an all-time safety record for United States civil air carriers. Complete records for the first 11 months of 1954, plus an estimate for December, indicate a "record low passenger fatality rate of 0.08 per 100 million passenger-miles flown," said the Board.

The Board's Bureau of Safety Regulation announced the 1954 Review and Amendments of the Airworthy Regulations. The Bureau also issued another notice of proposed rule-making order to defer the effective date of a requirement for a crash ax on all scheduled air carriers from January 1, 1955 to April 1, 1955, in view of reports indicating the uncertain effectiveness of such axes in emergencies.

Marine Safety

H.R. 129 (McCormack) would provide for the installation of automatic call selectors on Ameri-

can cargo ships carrying less than two radio operators; and H.R. 198 (Thompson) would set up a floating ocean station in the Gulf of Mexico to provide storm warnings for the Gulf states.

The Coast Guard issued revised regulations for the transportation and storage of explosives or other dangerous articles or substances and combustible liquids on board vessels, in order to conform as nearly as practicable to revisions in the Interstate Commerce Commission's Regulations concerning land transportation of the same commodities.

The Treasury Department has transmitted to the Congress a draft of proposed legislation relating to life preservers for river steamers.

Home Safety

S. 75 (Anderson and Young) would prohibit the blending of wheat imported as unfit for human consumption with wheat suitable for human consumption. H.R. 552 (Lane) would prohibit from interstate commerce all toys and other manufactured articles containing nitrocellulose or which are otherwise found to be dangerously flammable.

The Department of Health, Education and Welfare issued a proposed rule-making order, subject to hearings and expression of views by interested parties, for a change of the regulations under the Food, Drug and Cosmetic Act concerning harmful coloring matters.

Education

H.R. 290 (Rains) would amend the tax laws so as to exempt from the manufacturers' excise tax certain automobiles furnished without charge to schools for use in driver-training programs.

Government

H.R. 176 (St. George) would establish a Federal Safety Division within the United States Department of Labor.

The Secretary of the Navy has transmitted to the Congress a draft of proposed legislation to authorize reciprocal agreements between government agencies and public or private organizations engaged in fire-fighting activities.

Welding Show to Be Held in Kansas City

The American Welding Society will produce its third annual Welding Show at the Municipal Auditorium, Kansas City, Mo., June 8 through 10, it is announced by Joseph G. Magrath, national secretary. Concurrently with the show, from June 7 to 10, the society will conduct its annual Spring Technical Meeting.

Exhibit space taken by manufacturers already exceeds the total used at the society's show in Buffalo last Spring and more than 95 per cent of the available space in the Kansas City auditorium was contracted for prior to the first public announcement of the show.

The man who expects much from himself and little from others has few rivals.

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The New Man

—From page 30

the ball now that I've a better idea of what you want."

Two days later, Martin, the paint shop foreman, came in to see me. He didn't know whether to blow up or laugh, and his words were a little of both anger and humor.

Smith had gone over his department slowly and painstakingly, jotting down many notes on the inspection form, looking very solemn and very displeased. When he got through, he came to Martin and read him a long list of faults he had discovered. He was, he told Martin, grieved to have to report the condition of the department as "poor."

You have to know Martin to appreciate just what that meant. Martin is as scrupulous a departmental housekeeper as you will find in any plant paint department anywhere.

I got hold of Smith's report and went alone to the department. Even making allowances for Smith's talking to Martin—which was contrary to his instructions—and giving Martin a chance to clean things up, it was obvious that the report was grossly unfair and picayune. He had reported a paint spill that happened while he was watching and which was being cleaned up before he spoke to Martin. He reported several dirty overalls as being drenched with paint, when they had a few spots on them. He did catch an open can of thinner—Martin admitted that. It should have pulled a "superior" rating down to "excellent."

So I had another session with Smith. At first, he put on the manner of injured innocence.—"You told me you wanted tight inspections," he said. Then he realized that was the wrong tack to take, and he began yessing me. "Right," he said. I've got it now, boss. It's like target shooting, isn't it. First I undershot, was too lax. Now I've overshot, been too tough. But now I've got that old target bracketed and I'll be on the bullseye all the way. Thanks a lot for straightening me out, boss."

The third week, I tied him to Harry's apron strings. Harry has some memories of his own of the heartbreaking situations in which a young safety engineer can get into. His first out-of-town trip provoked a high-level row, and Harry had not been clearly in the right all the way—only about 75 per cent of the way.

Harry accepted the assignment happily enough and the two of them huddled over charts and reports. "He's a smart boy," Harry said after work on Monday. "He's got an analytical mind. He spotted some trends quicker than I did."

Tuesday night Harry said, "O.K." when I asked how Smith was doing.

But by Thursday there was tension in the office you could sense clear out in the hall. Smith and Harry had no conversations at all when I was around, and Harry had nothing to say about Smith to me.

So I took Smith back under my wing on Friday. He was good on some paper work I gave him, but out on the floor in an investi-

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gation of the near-accident he missed the key factors and listed a couple of causes that were completely irrevelant.

The fourth week started better. He did an adequate job of presenting some facts to the safety committee. He made three inspections which were fairly near to sound. He did definitely show an analytical ability in some statistical interpretations.

He sensed that his stock was rising a little. His anxious, eager-to-please manner began to dissipate and be replaced with confident assertion.

Friday noon he was reading a psychological work on accident causes—one of those slick jobs that over-simplifies the engineering side of safety and does some slipshod statistical analysis to justify the claim that personal counseling is the core of the solution to the accident problem.

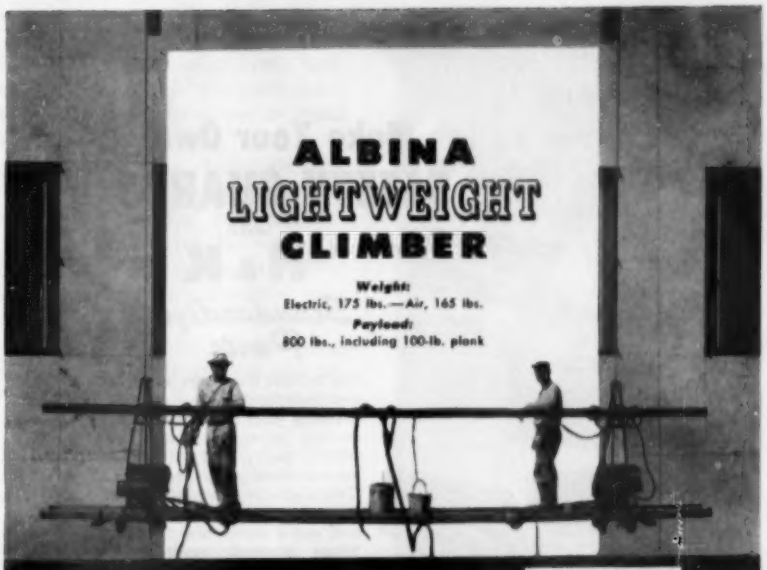
After lunch he asked permission to go off and try out an idea. I let him go, and in two hours Rielly from the woodshop was in to ask what was up. "This Smith spent 45 minutes talking to three of my men, asking 'em if they loved their wives, and if they thought their parents were fair to them when they were kids."

So, wearily this time, I explained the facts of life to Smith. I had, I told him, hired a safety man, not a psychiatrist. I asked him very politely to try to concentrate on becoming a passable safety man before he branched out into the realms of speculative psychology.

He took it, but only after some protest. It was clear that I appeared to him to be an old-fashioned, horse-and-buggy sort of character who was obstructing progress because I was wedded to out-dated methods.

Sue and I talked him over at length over the weekend. I put myself in the position of devil's advocate, defending him, while she proceeded to argue that on the basis of the evidence I ought to send him packing.

Her argument, boiled down to essentials, was this: Smith is obviously a bright boy in a totally wrong line of work. She suggested several fields in which he would probably be successful. I



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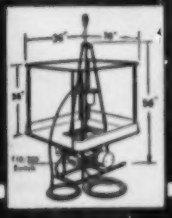

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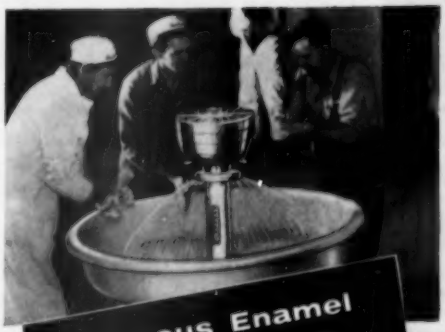

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won't name the ones she suggested, for they are all ones she views with detestation, and so her conviction that his bad qualities would be welcome in those fields would doubtless be slanderous.

I raised the point of his greenness, and mentioned Harry's difficulties at the start. Maybe, I argued, he deserved a more thorough training and a longer chance to prove himself.

Sue accused me of softness and sentimentality. And, as a clincher, she argued that I was being unfair to Smith by wasting his time in a field which would always be one of failure for him.

I was, I think, about half convinced. But I thought, give him another three weeks. Then, if he doesn't shape up, fire him.

That was what I thought when I went to work Monday. But an hour after I got to the office, Smith suggested a conference.

He was, he said, convinced that I was right about psychology. Engineering was the answer, he told me. Then he paused, looked around to be sure he wasn't overheard, and said quietly.

"Your man Dexter, he's a nice young fellow in a lot of ways. Pleasant personality, and all that. Too bad he isn't sound on engineering."

I didn't say anything. Smith went on to explain how he had personally saved Dexter from two catastrophic errors in their week together—errors that, Smith assured me, would have cost lives. I set my jaw on my anger, and as politely as I could, I asked Smith for details. He supplied them, complete with sketches.

They were very damning—if they were true.

But I have worked several years with Harry Dexter. I know his strengths and weaknesses like a book. If Smith had chosen to challenge Harry on a chemical problem, I'd have had to check to know who was right. But Smith's tale was one that portrayed Harry as a boob on materials-handling equipment — Harry, who at 28 knows that field better than most men with 20 years of safety work.

So, my problem was solved. "Go get your time," I said.

He gawked at me. "What do you mean?" he said.

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"Two things," I snapped. "You have lied to me. And you lied, not just to make yourself look good, but to tear down a good guy. You're through!"

Later that day I called my friend with the oil company and told him what had happened.

"Gee, I'm sorry," he said. "I know the boy's no ball of fire, but he's my wife's nephew and . . . . . "

I hung up on him. And sitting there I delivered myself of an ultimatum to be filed in my innermost consciousness—the resolution never, under any temptation, to misuse the letter of recommendation to inflict upon my friends the weary task of unmasking and disposing of incompetence.

All in the Night's Work

—From page 29

patrol car is winding along tree-lined roads, keeping watch over property beyond the limits of the plant area, another officer is walking briskly over his route in the plant itself.

A plant protection officer on foot puts his time clock to good use. There are between 18 and 24 keys in each building which must be turned in his clock during each round of duty.

As he walks his rounds, the officer watches the gauges which keep him in constant touch with the "pulse beat" of the sprinkler systems. If a gauge is off the mark, a hunt is on. The protection officer combs the entire area on the supposition that there is something off key beyond the mechanism itself. Only when all other possibilities have been exhausted does the officer inspect the gauge for faulty operation.

Should one of the multitudes of sprinklers show signs of activity, the search becomes really intense. Other members of plant protection join in the investigation, brought to the scene by an extensive communications system composed of telephones strategically placed throughout the plant.

In going through an IBM factory, the most casual observer can't overlook the familiar metal sentries—the fire extinguishers. There's always one handy, and

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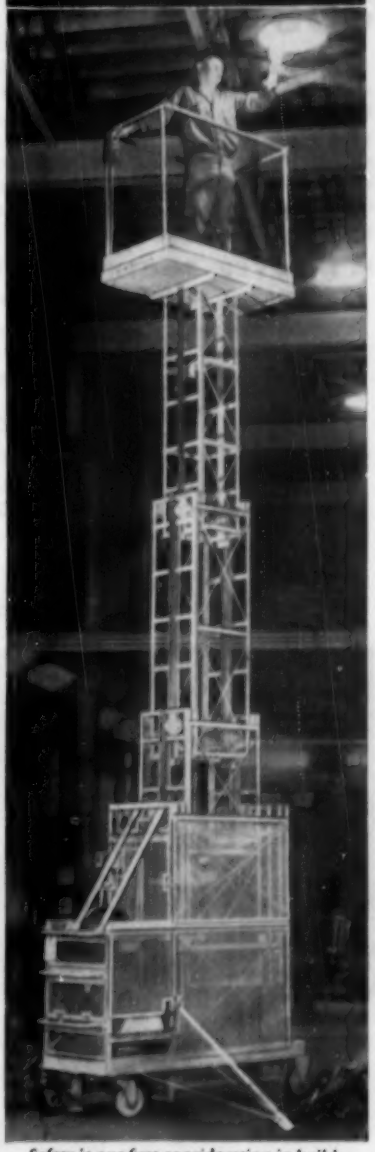

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the right kind for the exposure. Other emergency equipment includes a fire engine, walkie-talkies, and an ambulance. Employees take considerable pride in their emergency crew and fire brigade activities.

Emergencies are rare. On a typical night all is serene. The officer proceeds down empty halls and through empty offices, enters rooms where pieces of test equipment performed their seemingly unceasing work as if guided by a phantom hand, look carefully over areas where wired equipment is stacked in racks and deep niches where pipes and gauges indicate the heart of the heating and power system of the building.

In the testing rooms, where whole rows of typewriters and printers automatically click unending messages, the Plant Security Officer makes sure that no moving part is jammed or broken. In rooms filled with supplies, he runs a flashlight into every corner, guarding against that unlikely but always possible wisp of smoke that could spell disaster. In a room where wiring and electrical parts are stacked, he picks up each of several soldering irons to make certain that they were disconnected. By the time he has completed the round, he is sure that his area is free from hazard.

But, before he is through, there is a stop of another nature. As he reached an area proclaimed by neat white letters to be "restricted," he looks carefully up and down a row of files whose drawers are tightly shut by iron bars held in place with combination locks. If one of the locks is not fastened securely, the officer draws a red ticket from his pocket. He snaps the lock and attaches the ticket to it to inform the file's user on the following morning that a security violation had been committed.

The plant protection officers probably see more of the plants and at more varied hours than do any other representatives of the company. Each month sees them working a different shift. Rotation of duty guarantees for an officer a variety of jobs that may take him to a new post each month for almost two years.

If Plant Protection can be said to have a "peak," it would be over week ends, when the plant is empty and quiet; so Saturday and Sunday for many of the officers are working days. Days off, for the majority of this group, come in the middle of the week.

According to the departmental managers—Charles T. Warner at Endicott and James F. Benson at Poughkeepsie—many of the men in the department qualified by experience in military or police work before they took positions in Plant Protection. Others gained their experience at the plants, and some have seen recent service as military policemen.

Courses, given on a rotating basis, emphasize not only the functions of the department, but specific practice in the handling of firearms, although the men usually are fully acquainted with the handling of weapons from their previous training. The courses also lay stress on practical training on the pistol ranges, handling of fire equipment, instructions on security regulations and first aid.

The demands placed upon a plant protection officer require a wide range of abilities. He must be ready for anything. And he is, according to the people at the plants.

High-Line Hazards

—*From page 32*

Demonstrations have been conducted before grade, high and university students, before Kiwanis, Rotary and Lions Clubs, safety conferences, 4-H Fairs, telephone company groups, womens clubs, and numerous other groups. The original unit has given 160 shows for more than 20,000 people and requests for repeat performances are starting to come in. Several other units are starting equally interesting runs in other sections.

One of the most interesting reactions has been from the groups who could be our most severe critics; the linemen and substation electricians themselves. The usual response is "That's exactly the way it happens" and "Let's see if you can . . ."

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causes of electrical accidents are portrayed:

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2. Wires down on car. With more cars and more poles it is inevitable that they will come in contact. It is often hard for the public to realize what can happen.

3. Crane boom into line. One district —18 incidents in one year with three fatalities! At the Livonia fire of last year two of the six fatalities occurred after the fire and in this manner.

4. Fire engine aerial ladder. With the change from wood to metal, one set of hazards has been exchanged for another. In 1953 five fatalities reported. Best Safety Rule — Be sure it is grounded; keep everyone away while ladder is being raised in position.

5. Kites in transmission lines. Rules for kite flying.

a. Fly in open field away from wires
b. Use dry kite string
c. Do not use wire or metallic string (Christmas package string)
d. If kite becomes entangled in high line wires, don't try to climb pole or get it out. **Call the electric company!**

6. Trees in line. One of the major causes for long customer outages; yet often times hard to sell the property owner on the mutual importance of trimming.

7. Television antennas. In fringe areas antennas are often 40 feet high. Constant buffeting by wind, rusting and corrosion brings dozens of these down in storms; often over high lines with disastrous results.

8. Lightning. With a source of high frequency it is possible to create realistic line faults on the unit.

9. Jacob's ladder. A favorite of the movies "mad scientist"—here it is used to demonstrate the properties of the electric arc.

10. Switching error. Opening a disconnect switch under load; an arc is drawn, gets out of control and climbs up into the bus structure causing an explosion. This demonstrates safety rule of "Inch them open." It has been said that more than half of the plant shut-downs are caused by human error. This is, perhaps, the worst offender.

11. Penny behind the fuse. Reams have been written about "octopus plugs," proper fuse size, etc., yet we continue to burn down homes by putting pennies behind fuses. In this incident about 12 inches of No. 12 house wire is burned up. It does not smell like Chanel No. 5 and leaves a lasting impression on anyone seeing it.

While the incidents noted above are usually the ones most often

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used in the talk, it is usually "slanted" to point up the hazards most likely to be encountered by the group before whom the talk is being given.

We believe that the unit has turned out to be one of the best public relations tools for the electric industry yet devised. Its appeal is universal; the show is as interesting to a seven-year-old kite flyer as it is to a graduate electrical engineer.

"A picture is worth a thousand words," we have been told many times. If that is true, a modern visual training aid such as the "high line hazard demonstrator" ought to be worth ten thousand.

Jules Verne

—From page 21

harbor, and locating and bringing to the surface $14 million which the Phillipine government had dumped into the harbor at Corregidor to keep it from falling into the hands of the Japanese.

In the past seven years, Zendar has lent his watery experiences to 26 films, the most recent of which have been *The City Beneath the Sea, River of No Return,* and *Black Lagoon.*

"The ocean is the last place for pioneers," says Zendar. "Now that man has scaled Mount Everest, there are few unexplored spots for the adventurous. But the ocean remains a mystery. In the next 20 years we shall probably learn more of its secrets than we have uncovered in the past hundred years.

"Such recent technical advances as the aqua lung, the diving bell and the bathysphere will enable us to probe deeper than we had ever hoped. We will probably be able to go as deep as Jules Verne's imagination. But for all our knowledge we have yet to duplicate many of the feats he wrote about."

Zendar pooh poohs talk that the ocean is dangerous. Under normal conditions, he says, there is nothing to fear. Sharks will attack only if there is blood in the water, barracuda will swim away if you advance toward them, and manta rays are really harmless fellows who want to be left alone.

He will admit, when pressed, that diving into depths is not quite as safe nor as comfortable as working in an office, but he maintains stoutly that accidents are due to carelessness.

"I always try to remember that hundreds of people have been drowned in bathtubs," he continued. "That makes me even more vigilant than I would be normally."

Zendar, who has descended 340 feet in a deep-sea diving rig, can recall only two incidents that threatened to put some gray into his blonde hair.

During the war when he was with a Navy crew salvaging a Japanese ship, his air hose got caught in a grating. He had to remain motionless for two hours while rescuers cut away the bars that trapped the hose.

The other anxious moment came when the diver actors, wearing the *Nautilus* suits, first entered the water on location at Nassau in the Bahamas. "I had tested the suit and trained the men," he said, "but this was the first time we—or anyone else—had ever put so many people in the water at one time. Thoughts of what might go wrong filled my head, and even though nothing happened then, or at any time during our underwater work, I was still plagued with nightmares for a week. Men walking around on the bottom of the ocean without air hoses just didn't seem likely or possible."

"We did fall short of Verne's goal," Disney admitted. "Captain Nemo and his men could operate for nine hours with their tanks of air. Our men could stay under only 50 minutes at a time—and that was long enough."

Movie audiences got one thrill that was strictly ad-libbed. In one scene where the crew of the *Nautilus* and their passengers were out on an ocean-floor expedition, an uninvited shark crashed the party. The cast almost had heart failure but the cameraman kept on shooting. The resulting scene, though not included in the script, was too good to throw away.

Maybe Zendar was right about sharks.

Safety Training

—From page 78

training of the employees of 45 mines in Kentucky, Virginia, and western Pennsylvania. All improved in accident-reduction within a short period. At a few mines that did not show much improvement, man-trip safety talks were used monthly; at some mines, follow-up safety classes were held, two hours for one day for each shift, every four months.

The national coal-mining industry's accident-frequency rate is about 50, and we all agree that is high.

We have authentic statistics which show that where mine employees and officials have received the accident-prevention course, the accident-frequency rate has been reduced an average of about 50 per cent and at many mines it has been lowered much more.

A special effort to train all the employees of our mines in accident-prevention should be undertaken. This can be accomplished with the cooperation of State agencies, unions, coal companies, and the United States Bureau of Mines. The writer believes that in 5 to 7 years all coal-mine employees could be trained 100 per cent.

Comments From Others

Class Members

Following are typical comments of class members:

Accident-prevention training for 100 per cent of our men is the best thing that ever happened to us.

If we decided to bring the course in here again, our men still would attend 100 per cent, as they did the first time. They realize the necessity and importance of the training.

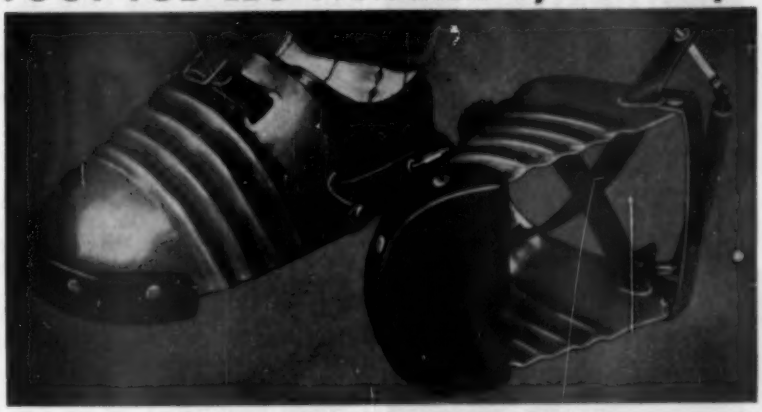
These comments are verified by the fact that when the instructors return to a mine four months after the course is completed with the follow-up session, attendance is generally 100 per cent.

Safety Directors and Operators

J. S. Whittaker, former safety director, Pittsburgh Coal Co., Library, Pa.:

At present we have trained all of our employees at 7 of our mines; a total of 1,100 men have been trained 100 per cent at these mines. Our safety record shows that we have reduced the accident frequency rate from 22.38 in 1953 to 15.85 as of April 1954.

FOOT-TOE-LEG Protection by "Sankey"



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J. W. Boyle, safety director, United States Steel Corp. (Coal Division):

The 100 per cent accident-prevention training at 7 of our mines has definitely lowered our accident-frequency rate from 11.0 to 9.4 in a few months.

M. E. Prunty, safety director, Consolidation Coal Co. (Ky.):

Improvements in safety at the mines of our company owe a great deal to 100 per cent accident-prevention course, which has aided in lowering the frequency rate to 5.60.

T. J. Liddle, safety director, Stonega Coke & Coal Co., Big Stone Gap, Va.:

Our Crossbrook mine, after the employees were trained 100 per cent in the accident-prevention course, worked over 1 year without a lost-time accident, and our other mines that were 100 per cent showed a remarkable reduction in accidents, too.

Arthur Bradbury, safety director, Inland Steel Co., Wheelwright, Ky.:

Results of the 100 per cent training in accident prevention at the end of 1952 were that the accident-frequency rate was reduced from 29.19 to 6.67 during the first 7 months in 1953.

C. A. Peterson, vice-president and general manager, Kramer mine, Northwestern Mining & Exchange Co., Stump Creek, Pa.:

This accident-prevention course is the best thing that ever came to our mine. It sure taught all of us how to think about safety, to be more cooperative, and really created friendly good will between employees and the mine officials.

United Mine Workers

B. B. Bloomer, safety director, District 30, Lexington, Ky.:

I will do everything in my power to help promote this 100 per cent training for our rank and file. This is the best training for our miners. It will reduce accidents and has already done a wonderful job in District 30. We officials of District 30 have taken the 100 per cent training and all have received certificates, cards and a 100 per cent training certificate from U. S. Bureau of Mines, and one from United Mine Workers of America, signed by John L. Lewis, president. We of District 30 feel proud of this 100 per cent training.

John Busarello, president, District No. 5, Pittsburgh, Pa.:

This 100 per cent accident-prevention training is wonderful. I didn't think it could be done, but our members and the local companies have cooperated wonderfully. It has, and will, definitely reduce accidents in coal mines. My only regret is that this training was not started 40 or 50 years ago. If it had, a lot of our people would be living today.

Andrew Rayner, safety director, District No. 4, Uniontown, Pa.:

I have attended the classes myself, and I am glad that this 100 per cent training has been brought into my district. Seven mines have taken the training and I hope all the mines in District 4 will take the training, because it is definitely what is needed for our miners. It is down to earth, they understand it, and it is a very interesting course.

Local Union No. 1198, Lawrence, Pa.:

To whom it may concern:

The officers and members of Local Union 1198, Lawrence, Pennsylvania, with to express our appreciation for the opportunity of having the accident-prevention course presented to us in such a manner as it was. It was extremely educational and we feel that it accomplished the purpose for which it was intended.

Our thanks for the program goes to the United Mine Workers of America, Pittsburgh Coal Company, Pennsylvania Department of Mines, the United States Bureau of Mines, and the excellent instructors of the Bureau of Mines.

Harry Kirkpatrick, President
Fred Hiders, Secretary

Marion Pellegrini, board member, District No. 5, Pittsburgh, Pa.:

I attended the accident-prevention course classes and found them being instructed by men who really knew how to attract and hold the interest of the men. As the classes progressed and I saw the possibility of such cooperative effort I was proud that the United Mine Workers of America were one of the sponsors.

Frank Solomon, member of mine committee, Lindley mine, Pittsburgh Coal Co.:

Perfect presentation of the material and the ability of the instructors to keep the men interested made the course.

Allen Condra, president, District 28, Norton, Va., and Sam Gaddy, president, District 30, Lexington, Ky., fully endorsed the course for miners because they realized that the 38 mines in Virginia and Kentucky that were trained 100 per cent have reduced their accident-frequency rate considerably.

State Inspectors

William Powers, State Mine Inspector of Pennsylvania, stated:

The recent 100 per cent accident-prevention training was the best educational work toward preventing mine accidents that I have ever seen in my 40 years of mining experience. The training was done in such a manner

that all miners could understand what was trying to be accomplished, and the miners' 100 per cent participation in the training speaks for the interest in the work and the subject material.

George Steinheiser, State Mine Inspector of Pennsylvania:

I welcomed the course in my district, and it is my opinion, the course is outstanding in many respects, such as lowering the frequency rate at mines where it was given, and also for the ability of the instructors to get and maintain 100 per cent participation from the miners.

Sam Cortis, State Mine Inspector of Pennsylvania, has been an outspoken supporter of the 100 per cent accident-prevention training and has completed the course along with the miners in his district. This man has done much toward aiding in the organization of classes at his district mines.

Michael Garnek, State Mine Inspector, Pennsylvania Department of Mines:

The Pennsylvania Department of Mines is cooperating fully with the Bureau of Mines putting on the course. I have attended all the sessions of classes put on at mines in my district, and I believe this is the best the Bureau of Mines has ever presented. I want to compliment the company for the excellent facilities provided. The instructors were excellent and kept the attention of the men at all times.

Safety Begins at Home

After everyone at the mine has completed the accident-prevention course, a safety-day rally is generally planned for the miners and their families a week or two after completion of the training. At the rally, recognition is given to the miners for their achievement in completing the training.

With wives and children present, as well as top representatives of the United States Bureau of Mines, the United Mine Workers of America, company officials, and State Department of Mines the awarding of certificates is a gala affair. Sometimes the company and the local union contribute jointly to a fund for door prizes and candy or favors for wives.

Throughout the rally, talks and lectures pertaining to various phases of safety in and about the mines and at the miners' homes are given by experts.

The instructor during his talk stresses the point that safety begins at home. He emphasizes particularly the fact that safety in the mines has its root in the homes. A man who goes to work with family troubles on his mind is very susceptible to injury; this has been proved many times. All members of the family should do everything possible to send their breadwinner to the mines with a trouble-free mind. The wives play a very important part in actively working toward an accident-free mine.

Conclusion

The accident-prevention training program of the United States Bureau of Mines is one of several educational features that has been formulated and is being administered so effectively at the present time for reducing accidents in and about the coal mines. The Bureau has put special emphasis on training additional accident-prevention instructors to meet the increasing demand for 100 per cent accident-prevention training at the coal mines throughout the

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different coal fields in the United States and Alaska.

The United States Bureau of Mines has secured additional equipment and other facilities to meet the demands and urgent requests being made by representatives of the coal-mining industry for this valuable training.

The Bureau's accident-prevention course is considered by those that have completed the course to be the best educational program yet formulated for dealing with all phases of mining accidents.

Persons desiring additional information about accident-prevention training or desiring to have the course conducted at their plant or mine should contact the local district office of the United States Bureau of Mines.

The Radial Saw

—From page 38

to the switch box are by means of solid conduit enclosed wiring, a ground is normally provided through the metal conduit and the normal grounding of the conduit. Where power is supplied through temporary wiring, by armored cable or flexible cords however, it is necessary to provide an additional wire to be used as a means of completing the ground connection.

The resistance to the ground of the conduit should be tested. Where the switchbox is mounted on the frame of the machine, a flexible connection should be placed in the conduit to prevent transmission of vibration and possible breaking of the conduit. A flexible jumper or shunt should be placed across the flexible connection to assure electrical continuity.

26. A magnetic type control switch is available which makes for safer operation. With this type switch in the event there is an interruption of current, the switch returns to "off" position automatically so that there is no possibility of the radial saw starting up when current service is resumed.

RULES FOR SAFE OPERATION

27. Operators should be thoroughly trained, and familiar with safe operating practices. This applies equally to helpers, off bearers, etc.

28. The saw should be returned at once to its position at the rear of the table after completing a cut.

29. The equipment should be shut down when any adjustments or changes in set up are being made.

30. The saw should never be left running unattended. The blade should be completely stopped before the operator leaves the machine. See Figure 3.

31. Stock should not be removed from the table until the saw is returned to its position at the rear of the table.

32. A stick or brush should always be used for removing small pieces of scrap. The operator should never place his hands in the path of travel of the saw.

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33. When crosscutting, the stock should lie solidly on the table and against the back guide.

34. When crosscutting, the operator should place his body to the side of the saw on which the handle is located, pulling the saw with the hand nearest the handle and handling the stock, with the other hand. The operator should never reach across the line of the cut.

35. When ripping, the direction of rotation of the saw should be upward toward the operator. The saw should extend slightly into the table. Use extreme caution when ripping warped or twisted stock because of the danger of pinching and binding the saw.

36. The anti-kickback device must always be used when ripping.

37. When making angle cuts or miter cuts, the locking device should be securely fastened to prevent the saw from digging in and rushing toward the operator. Care should be taken to keep the free hand away from the line of cut.

38. Only blades tensioned for the high speeds at which radial saws operate should be used.

39. Cracked saw blades must never be used on high speed equipment.

40. The work area should be kept clean and free of scrap material or other possible sources of poor footing. A scrap box should be used.

41. The saw should be fully guarded and whenever possible the lower self-adjusting portion of the guard should be used.

42. The machine itself should be well maintained in order to prevent excessive vibration which may result in "creeping."

43. Operators should always wear goggles or a face shield, and when ripping, a kickback apron. They should never wear gloves, rings, loose or torn clothing or other forms of clothing which might become caught by the saw.

44. It is good practice to have a pull-type switch in the electrical circuit as well as the "start and stop" switch. This pull switch should be locked in the off position when changing blades, making major set-up changes, oiling, repairing or adjusting.

45. One table should be kept free of the material on which saw blade may catch and travel forward.

46. When crosscutting heavy stock extreme caution should be used so the saw will not tend to jump toward the operator.

ACKNOWLEDGMENT

The original draft of this data sheet was prepared for the Engineering and Publications Sub-Committee of the Wood Products Section by Walter Baumgardt, Employers Mutuals of Wausau, Wis., and Roy Cameron, Washington State Department of Labor and Industries. It has been extensively reviewed by Council members and approved for publication by the Publication Committee of the Industrial Conference of the National Safety Council.

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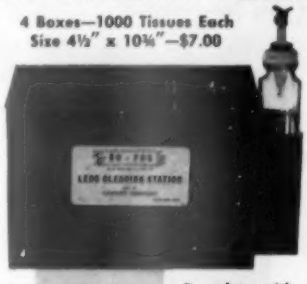

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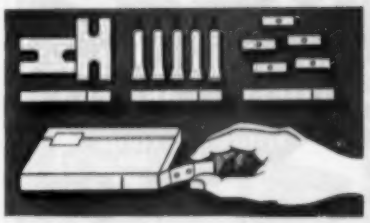

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Calendar Contest Winners for December

First prize in the National Safety Council's Safety Calendar Contest goes this month to George A. Larson, Minnesota Department of Highways, St. Paul, Minn. The theme in this contest was stop accidents—stay out of danger. Mr. Larson's last line was adjudged the best of all those submitted. It was:

Traffic dumb *and shop* wise *will not do.*

Second prize went to Robert L. Perry, Toledo Edison Co., Toledo, Ohio, for this line:

Safety's shield should be worn all day through.

Third prize was awarded to John Kent, E. I. du Pont de Nemours & Co., Clinton, Iowa, for the following line:

A safe worker takes safety home too.

The December limerick was:

A safe worker is Howard McGrew.
From hard hat to safety-toe-shoe.
But in traffic, by heck,
Does he stick out his neck!

Thirty $5 awards were issued to:

Charles R. Bahde, Plattsmouth, Nebr. (Individual Member.)

Darlene R. Demaree, Sinclair Refining Co., East Chicago, Ind.

Mrs. Eleanor M. Kizer, U. S. Rubber Co., Mishawaka, Ind.

John E. Biddle, American Viscose Corp., Parkersburg, W. Va.

Floyd Snyder, Bethlehem Steel Co., Bethlehem, Pa.

Andy S. Thomas, Akron Fire Dept., Akron, Ohio.

Fred Gruelle, U. S. Army Corps of Engineers, New Haven, Ind.

Osler W. Fishero, Magnolia Petroleum Co., Beaumont, Texas.

Mrs. William H. Thompson, Memphis, Tenn. (Individual Member).

Mrs. Stanley Clark, East Bradenton, Fla. (Individual Member).

Miss Eva Lennon, Hartford Electric Light Co., Hartford, Conn.

J. R. Ross, American Oil Co., West Haven, Conn.

Rose V. Burnham, Willsboro, N. Y. (Individual Member).

Robert Carey, Bethlehem Steel Co., Pottstown, Pa.

Myrtle Roguske, Wisconsin Telephone Co., Princeton, Wis.

Miss Susie Mae Smith, Board of Education, Tuscaloosa, Ala.

Mrs. F. M. Gerhard, American Airlines, Inc., Knoxville, Tenn.

Mrs. Margaret B. Collins, Bradford City School District, Bradford, Pa.

A safe worker is Howard McGrew,
From hard hat to safety-toe shoe.
But in traffic, by heck,
Does he stick out his neck!

F. M. Kratschmer, Union Wire Rope Corp., Kansas City, Mo.

T/Sgt. LeRoy A. Kathrens, 9670th Air Reserve Squadron, Kenosha, Wis.

Mrs. Betty M. Davis, San Gabriel, Calif. (Individual Member).

Robert S. Stone, Carbide & Carbon Chemicals Co., Oak Ridge, Tenn.

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Mrs. John A. Holahan, Great Northern Railway, Duluth, Minn.

Philip W. Kirkman, E. I. du Pont de Nemours & Co., Clinton, Iowa.

Jeremy W. Smith, N. E. Power Service Co., Worcester, Mass.

Katherine F. Quesenbury, Thiokol Chemical Corp., Marshall, Texas.

Roger Reinhard, Alpha Portland Cement Co., La Salle, Ill.

Mrs. James H. Van Exan, Steel Company of Canada, Hamilton, Ontario, Canada.

Charles Klein, Socony-Vacuum Oil Co., Inc., East Chicago, Ind.

George Jepson, Steel Company of Canada, Hamilton, Ontario, Canada.

Got a Public Enemy In Your Plant?

MAYBE it's the influence of TV, but crime seems to be inspiring a lot of safety stunts. Witness, for example, the number of skits of the Dragnet pattern that have been used to get the safety idea across.

W. C. Boardman, safety director for The Kansas Power & Light Company, Lawrence, got an idea for bulletin board displays from the mugs and finger prints of the public enemies on display at the post office. Here are outlines for two of them:

REWARD FOR APPREHENSION

Back Injury has been named the No. 1 Criminal at home or at work.

Bill Boardman, Safety Director

DESCRIPTION:

1. Caused by Wrong Lifting Methods

Place feet on firm surface. Keep body straight and use leg muscles for power.

2. Caused by Physical Defect

Some people have poor bone structure in back and pelvic region. An X-ray will find it.

3. Caused by Sudden Exertion

Jerking on a heavy load sprains the muscles but doesn't move the object. Exerting little-used muscles can be dangerous.

4. Caused by attempting to lift more than one person can safely. Get help on a big lift.

The management of this company requests the cooperation of every employee in the stamping out of this accident.

(Signed by a company executive)

REWARD FOR APPREHENSION

Foreign Body in Eye has been added to Most Dangerous Criminal List.

Bill Boardman, Safety Director

DESCRIPTION:

1. No Eye Protection

On jobs where there is any danger of flying particles, fumes, or falling objects, there is the right kind of protection for eyes.

2. Wrong Eye Protection

Eye protection means many kinds of eye covering. Get the right kind for the hazards of your job.

3. Wrong Training—"I'll take a chance."

Supervision has not sold the value of eyesight or the great handicap of a lack of eyesight.

4. Wrong Attitude — "Safety glasses are a nuisance."

They are, but not as great a nuisance as no sight.

The management of this company expects every employee to realize his eyes are valuable.

(Signed by a company executive)

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3865 N. Milwaukee Ave., Chicago 41, Ill.

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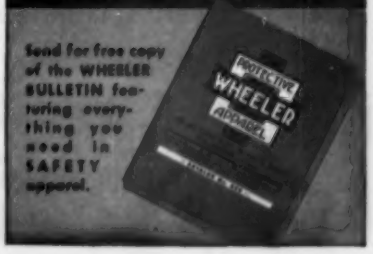
A COMPLETE LINE

OF SAFETY CLOTHING


Send for free copy of the WHEELER BULLETIN featuring everything you need in SAFETY apparel.
PROTECTING
WHEELER
APPAREL

Self-Powered
COMBINATION SCRUBBER-VAC
Cleans Vast-Area Floors
"By-the Mile"

- **Cleans up to 16,000 sq. ft. per hour!**
- **Applies the cleanser, scrubs, and picks up — *all in one operation***
- **Mounts a SELF-STARTING gasoline engine**

This *all-in-one* cleaning unit, *Finnell's 218G,* is indeed the answer to today's need for increasing output per man-hour on vast-area scrubbing. *The 218G completely mechanizes scrubbing* — applies the cleanser, scrubs, and picks up — *all in one operation!* Independence from power lines permits the machine to go wherever the operator guides it . . . working in and out of production areas with ease . . . *scrubbing continuously.* Thus the *218G* is capable of cleaning up to 16,000 sq. ft. per hour!

Maintenance men appreciate the labor-saving features of this unit. The gasoline engine starts quickly and easily by pressing the starter button (eliminates rope-pulling). And there are no switches to set for *fast* or *slow* — slight pressure of the hand on clutch lever adjusts speed to desired rate (up to 136 ft. per minute). Two 18-inch brushes give a 36-inch scrubbing surface. *One engine* (2 cyl., 4 cycle, 9.4 hp., air-cooled) operates all working parts. The powerful vac performs quietly. Gasoline only is used for fuel — no mixing required.

Whatever the area of your floors, find out what *you* would save with a *Combination Scrubber-Vac. Finnell* makes a full range of sizes, including *electric* as well as *gasoline* models . . . available on lease or purchase plan. It's also good to know that *a Finnell Floor Specialist and Engineer is nearby* to help train your maintenance operators in the proper use of *Finnell Equipment* and to make periodic check-ups. For demonstration, consultation, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 2202 East St., Elkhart, Ind. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines

Everything FINNELL for Floor Care

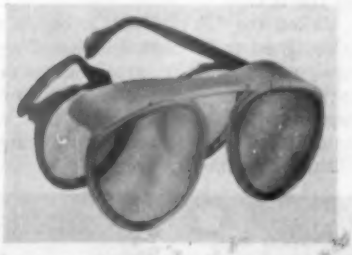
BRANCHES IN ALL PRINCIPAL CITIES

NEW SAFETY EQUIPMENT

Further information on these new products may be obtained by writing direct to the manufacturer or by circling the corresponding item number on the Reader Service Postcard.

Clip-On Goggles

A new type of clip-on, called "Tuc-Over," provides shatterproof lenses in an unbreakable frame of polyethylene. "Tuc-Overs" snap on or off prescription frames, and are held firmly in place by plastic clips which will not scratch either the frame or lenses. This lightweight equipment prevents breakage or pitting of prescription lenses and can be used with shatterproof green lenses, to cut out glare from sun or other light sources. Over-eyes protection is provided by the visor which extends back to the forehead to block out particles, dust, perspiration and glare. Made in two sizes to fit all prescription glasses frames, the "Tuc-Overs" have shatterproof



Methacrylate lenses .080 inches thick, and optically correct. Lenses are available in light or medium green, and the frame in translucent white or green.

Watchemoket Optical Co., 232 West Exchange St., Providence 3, R. I. (Item 1)

Quilted Undersuit

Called Winter Seal, this quilted undersuit, consisting of a jacket and slack combination, has a total weight of 39 ounces. It is said to afford necessary warmth and freedom of movement at sub-zero temperatures and fits snugly under light outer wear clothing. Recommended by the manufecturer for outdoor work, as well as refrigerator warehousemen, the suit is said to be non-fatiguing and non-restrictive. Accessory garments include full-length refrigerator coat, vest, socks, mittens and

hood made of the same material. According to the manufacturer, these garments retain normal body warmth at temperatures ranging from 40° below to 60° above zero.

Refrigiwear Clothing Co., 201 East 34th St., New York 16. (Item 2)

Device for Scaffolds

A new device anchored overhead, and housed in a metal box containing safety brake and reel of nylon or wire rope, automatically prevents fails in high places on scaffolds, platforms or stages.

A line attached to the worker's harness can be freely withdrawn from the box up to a certain speed, allowing free movement, but is kept taut by an automatic spring rewind. At higher speeds, the line automatically brakes to a stop. With 150 feet of wire rope, it allows swing stage work on an average 15-story building without rewinding, although a permanently mounted handle permits rewinding at any time. Hardware meets Government specifications.

The manufacturer states that the device has been tested by two independent laboratories with a 201-pound weight.

The Wind-Kor Automatic Safety Device Co., 3980 N. Elston Ave., Chicago 18. (Item 3)

Welding Helmet and Hat

A new, simple method for attaching a welding helmet to a safety cap is embodied in the "Two clips and

neoprene strap" device recently introduced. Installation of the "Speedy Attachment" to helmets in the field is done with a screw driver or a coin. The welder can then instantly attach or detach the safety cap which is clipped into the helmet under the tension of the neoprene strap. No basic alteration of either helmet or safety cap is necessary. The "Speedy Attachment" is said to have long life and fits all popular peak-type safety caps.

The Fibre-Metal Products Co., Chester, Pa. (Item 4)

Slip-On Thimble

The Newco thimbles are said to eliminate the flattening or pulling together of sling eyes under heavy loads. The device also minimizes

wear at the top of the eye.

Cast of manganese alloy, the thimble is said to have a minimum tensile strength of 110,000 psi with good abrasion resistance. It is recommended to prevent abrasion when a choker sling is used by slipping one eye through another. Easy installation is an important design feature, enabling the operator to attach or remove the thimble in a matter of seconds. There are no lips to bend over or rivets to peen. The design holds it fast until the operator wishes to re-use it on a different sling. Thimbles can be used on any size from six inches up. Sizes available: 3/8 inch, 1/2 inch, 5/8 inch, 3/4 inch, 7/8 inch, and 1 inch.

Newman Manufacturing & Sales Co., P. O. Box 5939, Kansas City 11, Mo. (Item 5)

Plastic Lineman's Tent

A new, one-man tent of translucent plastic for telephone and utility line crews has just been announced. This shelter was developed in cooperation with safety supervisors, and is recommended for aerial work, splicing, or as a manhole cover. It is lightweight, easy to handle, and offers protection while permitting full transmission of daylight for the work.

Weighing only 13 pounds, the plastic tent is easily erected or taken down by one man. It is waterproof,

won't burn, and resistant to acids, oils and gasoline. All seams are electronically welded and strain points are reinforced. Brass grommets and rope loops are provided for tying down. Made of Bakelite Krene, the tents are easily cleaned by washing with soap and water. They can be stored wet without danger of rot or mildew. A larger size tent for two-man splicing crews and for covering extension ladders and "Baker" boards is also being manufactured.

Plastimayd Products Corp., 931 S. E. Sixth Ave., Portland 14, Ore. (Item 6)

Welding Shield

This portable welding unit now includes a Spa-Fla safety welding shield, which the manufacturer states has been U. L. approved. The shield is lightweight, and made of fire resistant canvas and wire fabric, which permits it to be shaped around hard to reach welding areas. Spa-Fla on ring stands (set of 3) provides ventilation on inside jobs, and

is a good wind break for outside work, being suitable for rough floors and terrain.

Frommelt Industries, P. O. Box 165, Dubuque, Iowa. (Item 7)

Eye Testing Chart

The Good-Lite translucent eye-testing chart is said to enable untrained personnel to administer an accurate eye test. The manufacturer specifically states that the testing device is not claimed to be corrective, but merely points out hazardous or potentially hazardous sight deficiencies.

The unit consists of a washable translucent plastic testing chart, backed up by an 8-watt fluorescent bulb. The chart is housed in a metal case with a carrying handle.

Good-Lite Manufacturing Co., 7638 W. Madison St., Forest Park, Ill. (Item 8)

Underwater Breathing Unit

Called the Hydro-Pak, this self-contained breathing unit is intended for use in underwater inspection, salvage, maintenance or repair work. Worn like the Scott Air-Pak, it is said to be simple to use, and does not require a great deal of training. It features a full face mask which enables natural breathing through nose or mouth. A large safety glass

window permits a wide, clear field of vision.

Automatic air regulators located at both sides of the mask permit breathing in any position. Other features include an "Air Economiser" for conserving the compressed air supply while wearing the Hydro-Pak above water, a short, tough breathing hose that is out of the way where it can't snag or interfere with freedom of movement, full back plate, and an air reserve mechanism and water rejection button.

Scott Aviation Corp., 211P Erie St., Lancaster, N. Y. (Item 9)

Plastic Carboy

Increased safety and ease of handling are the features of this new stackable carboy. Both the lightweight solid wood jacket and polyethylene bottle have been approved by the ICC.

Called the "Poly-Box Carboy," it is designed to fit most acid-handling equipment, and is available with carboy bottles of 6½ and 13 gallon capacities. The wood jacket has a liquid level slot for visibility during filling or while in use.

The wood jacket has an opening in its base for stacking, and the base design permits handling by lift trucks.

Industrial Safety Supply Co., Inc., Hartford, Conn. (Item 10)

Fire Extinguisher

Styled by Raymond Loewy Associates, this new industrial fire extinguisher will expel ten pounds of dry chemical. Its light overall weight of 22 pounds, and simple operation, enable inexperienced personnel to use it against fires in flammable liquids, gases, chemicals and electrical equipment. Instead of having to pull a ring-pin, the user merely applies additional hand pressure to puncture the CO_2 pressure cartridge that activates the extinguisher. Other design changes include a new-style fill cap that the manufacturer considers more effective in keeping moisture out of the extinguisher shell; a functional carrying handle that is said to be less subject to vibration on vehicles; and a squeezable nozzle. The unit has the approval of the National Board of Fire Underwriters.

Ansul Chemical Co., Marinette, Wis. (Item 11)

Safety Can

This new line of flammable liquid containers carries UL and Factory Mutual approval for handling or storing oil, gasoline, or similar liquids in factory, home, or other locations.

Featured in the new Eagle series safety cans of five sizes: 1 quart, 2 quart, 1 gallon, 2½ gallons, and 5 gallons. The three smallest sizes have one-hand trigger-grip handles, while the two largest safety cans have free-swing handles. Both types have a self-adjusting protective guard cap which prevents leakage if can is upset. All containers are of one-piece construction with no seams, as body and breast are welded together electrically under electronic control. The entire line is made from heavy 24-gauge terne steel, and finished in high-gloss red enamel. Bottoms are reinforced with heavy-gauge steel hoops.

Eagle Manufacturing Co., Wellsburg, W. Va. (Item 12)

Key Driver

This new Key Driver for driving die and sow block keys in forging hammers replaces the hazardous method of driving keys by using a battering ram suspended from an overhead crane on the building structure. According to the release, the battering ram method requires about 3½ hours per change and a crew of six men. The Key Driver, which operates pneumatically using plant air, delivers an accurate blow with the controlled force of an 800 pound steam hammer, if desired. It is a portable modified horizontal hammer and is usually handled by a fork-lift truck. Average key driving

time, including carrying the key driver to and from the hammer, is cut to 20 minutes. Only two men are normally required.

Erie Foundry Co., Erie, Pa. (Item 13)

Crane Warning Device

This electronic safety device warns crane operators of the proximity of high-lines from a distance of eight inches up to 400 feet, depending upon the voltage in the lines and the setting of the controls by the operator. It functions on AC or DC voltages, active telephone lines, street car lines, and some shallow buried, underground cables. Special circuits allow the device to not depend upon actual current being drawn through the lines to set off the alarm. Presence of voltage is all that is necessary to cause device to function at a safe distance.

The unit is housed in a heavy steel case which is dust-proof and weather resistant. It has welded corners and is copper, nickel and chrome plated to a high polish for durability. The Boom Detector Box is constructed of steel with welded corners, black crackle finished, and is also weather-proof. The standard unit comes equipped with enough cable for average 50-foot boom crane. Additional cable and coupling plugs are available. The manufacturer states that the price of this equipment has been sufficiently reduced so that the small crane operator can justify the cost.

Electro-Alarm Safety Devices, 745 Pleasant, Fresno 5, Calif. (Item 14)

Hard Surface Decal

A new type of hard top, non-scratch decalcomania was recently introduced. Specifically designed for industrial applications, where rugged usage is indicated, these hard top decals can be applied to almost any painted surface, smooth or crinkled. The decal pulls down into crevices or crinkly, rough finishes, becoming an integral part of the surface to which it is applied. Because of resistance to abrasion and marring, it is also suitable for outdoor usage.

Palm, Fechteler & Co., 85 Maple St., Weehawken, N. J. (Item 15)

Traffic Liner

The new JAWCO Model 500 Traffic Liner is designed for a variety of jobs. With the applicator brush on the left side, the operator can mark diagonal parking lines. With the brush on the right side of the machine, it is ready to lay down straight lines for ordinary traffic or industrial markings. An attachment makes it suitable for marking athletic fields, clay tennis courts, etc., with whitewash lines.

A five-gallon tank is placed be-

tween the handles of the liner to increase the flow of paint or whitewash, and an adjustable stop is placed on the flow-control lever to allow the right amount of liquid to flow into the applicator brush. Made of heavy-duty steel, Model 500 weighs 45 pounds. It is 43½ inches high, 27 inches wide and 33 inches long. A 6" x 6" x 12½" accessory box placed behind the front wheel between the handles can be used to store brushes, solvent, chalk lines, etc.

The Weaver Machine Co., P. O. Box 1224, York, Pa. (Item 16)

Vibration Mountings

Identified as Type SF, this fully enclosed spring-type vibration isolating unit is of telescopic construction. The steel spring mounting, with chrome vanadium springs, permits greater deflections necessary for high isolation efficiency. According to its manufacturer, the units offer increased carrying capacity without increase in physical size.

Semi-steel housings of telescopic construction result in a complete

enclosure of all working parts. Oil, waste, cuttings, etc., cannot clog springs or working parts. Resilient guides contained within upper portion of housing are protected from floor oil drippings, dirt, waste. Additional features include: combination adjustment and leveling bolt for loading springs and leveling isolated equipment, lock nut for securing machine base, anchor-bolt slots, auxiliary anchor bolt holes for straddling beam web, safety bolts to prevent separation of upper and lower housings, positive all directional snubbing and damping controls at each end. The manufacturer recommends the unit for punch presses, compressors, mills, engines, and similar rotating and reciprocating machinery.

Vibration Mountings, Inc., 76-19 Queens Blvd., Elmhurst 73, L. I., N. Y. (Item 17)

Slidefilm Projector

This manufacturer announces that models PS43, PS63, and PS65F remote push-button control projectors may be used in conjunction with the new Webster Electric Ekotape Cin-

audio tape recorder, Model 207, to provide automatic sound slidefilm presentations.

This combination use permits the instructor or lecturer to make on-the-spot automatic sound slidefilm programs, or several foreign language narrations for the same filmstrip. Tapes can be erased automatically, re-recorded or cut and spliced. Pressing a button on top of the recorder panel automatically applies a 1000 cycle signal on one half of the tape. On play back, a special amplifier converts the control signal into electrical energy which indexes the Soundview projectors automatically.

The projectors can be used for independent push-button remote control of the 35mm strip film from anywhere in the room. They are available in 300 watts and 500 watts.

Automatic Projection Corp., 29 West 35th St., New York 1. (Item 18)

Tensile Testing of Chains

This new testing procedure, using the versatile Dillon Traction Dynamometer, was developed at the Barber-Greene Company, Aurora, Ill. As shown in the illustration, the chain to be tested rests on a table constructed of tubing and steel plate.

A hinged cover, attached to the nearer tube in the picture, closes over the test table as a safety factor in case of chain breakage. The Dynamometer is positioned in series between the chain and a 20 ton hydraulic jack operated by a motor driven pump. Power is then applied, and load in pounds is instantly registered on the dial, thereby providing a fast production line check on all chains produced. The set-up may be compact as desired, being governed only by the length of the specimens to be tested. This procedure may also be applied to other materials such as cables, ropes, rods, etc.

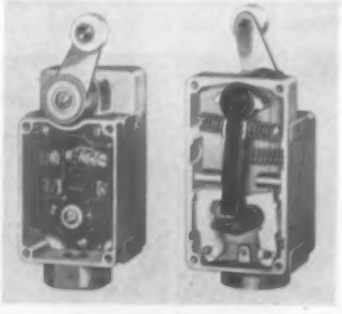
The Dynamometer shown in this test is of 0-15,000 pound capacity. Other models are available from 0-500 or from 0-100,000 pounds. All are equipped with safety glass crystals, shackles and pins, and may be operated in any position. Approximate dimensions are 11½ inches by 2¼ inches by 5¼ inches. Net weight is 8½ pounds.

W. C. Dillon & Co., Inc., 14620 Keswick St., Van Nuys, Calif. (Item 19)

Limit Switch

A new heavy-duty machine limit switch designed for long life, minimum maintenance, and wiring ease, has just been announced. Features of the Type DM machine limit switch include increased wiring space, protection against excessive overtravel achieved without shear pins, complete separation of electrical and mechanical mechanisms, and nylon-to-steel wearing surfaces.

The switch is conservatively rated at 10 amperes continuous capacity up to 600 volts AC, 550 volts DC. The switch is available with ½ or ¾ inch conduit connections. A variety of front and reverse-lever



mounting arrangements can be made with six optional back cover plates. Eight types of operating levers are available, including four lengths of straight levers, track-type, planer-type and shipper rod arms.

Clark Controller Co., 1146 East 152nd St., Cleveland 10, Ohio. (Item 20)

Non-Skid Floor Finish

This new plastic floor finish, combines non-slip qualities with high

lustre and low maintenance. Called Super Glazoleum, the manufacturer

recommends it for use on tile, linoleum, cork, terrazzo, magnesite and cement floors. It is said to resist scuffing, and offers no maintenance problem—damp mopping removes surface dirt and keeps it shiny. The new non-slip product is a plastic resin emulsion, and is applied with an applicator furnished by the manufacturer.

Colonial Refining & Chemical Co., NBC Bldg., Cleveland, Ohio. (Item 21)

Plastic Headshields

Two new molded fiber glass plastic headshields for welding operators have just been announced. Made of fiber glass reinforced plastic, these shields offer the user lightweight comfort with complete head protection from the welding arc and spatter. Fiber glass plastic is durable, heat and moisture resistant, and its smooth surface is easy to clean.

Type 971 has the lens holder molded into the shield to eliminate light leaks and to further reduce the weight. Type 973 is of the same

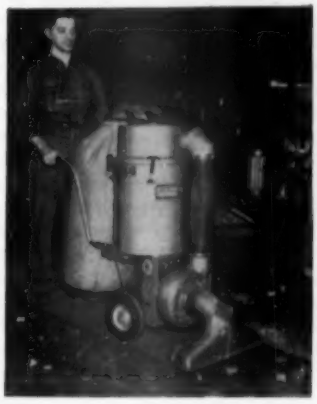
general design and plastic construction, except it has a lift front lens holder to permit the operator to view, chip and clean the weld without raising the hood. Both shields are equipped with Federal Specification lenses.

Hobart Bros., Hobart Square, Troy, Ohio. (Item 22)

Vacuum Cleaner

Redesigned and improved, the new Floormobile is a mobile suction unit for cleaning large floor areas. It is said to be more compact, lower, and more rugged than earlier models, and has an improved filter bag construction. Safeguards against fire hazards are now standard on the gasoline engine and include a fuel tank safety fill and vent cap, metal sediment bowl, spark arrestor and push-button engine shut-off.

The Floormobile has a powerful suction nozzle, with a wide orifice,



mounted just above the floor surface. It will pick up dust, dirt and trash at the rate of 20,000 square feet an hour.

Handling Devices Co., Inc., 43 Pearl St., Brookline 46, Mass. (Item 23)

Black Light Testing Unit

Called the Mineralight, this black light unit is designed for use in inspection procedures, in flaw detection, control, processing, for invisible marking, coding, and other manufacturing operations, as well as for examination and inspection of agricultural products. The unit consists of a Model SL 3660 long wave Mineralight for AC operation, and a 6-volt adapter for use with a portable battery or other 6-volt source. The fact that over 3,000 substances are activated by invisible ultra-violet black light so they glow or fluoresce in different shades and colors is the basis for this new method known as "fluorescent inspection." These substances may be "naturally" fluorescent, such as oils, mould, and other types of contamination, or they take the form of tracer pastes or powders, lacquers, invisible inks, water or oil-soluble additives, and other substances to be integrated with present materials.

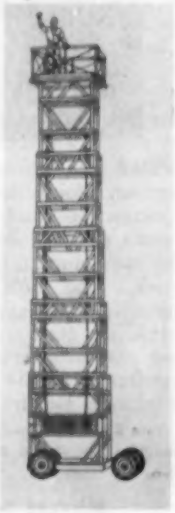
Many other objects and materials

which are only slightly or even non-fluorescent still exhibit marked differences under this irradiation. Long wave ultra-violet energy is said to be non-injurious, to eyes and skin, and products.

Ultra-Violet Products Co., Inc., 145 Pasadena Ave., South Pasadena, Calif. (Item 24)

Work Platform

Especially designed for overhead maintenance where the platform must be rolled over rough terrain, the Mobile Work Platform comes in one piece with no erection required, no loose parts. It may be used at any desired height, and welded steel construction insures rigidity.



The unit is mounted on a trailer suitable for rough terrain, and is equipped with leveling jacks.

Atlas Industrial Corp., 849—39th St., Brooklyn 32, N. Y. (Item 25)

Floor Patching Material

A new plastic material has been formulated for repairing floor cracks and preventing further surface deterioration. Known as Jiffy Floor, it can be applied without interfering with production or traffic and is said to withstand heavy loads immediately. It is a fine granular, ready-to-use plastic product that fills hairline cracks, shallow holes, spalled floors or expansion joints.

Jiffy Floor contains no asphalt, cement, sand or gravel, and the manufacturer states that it will not crack, crumble or curl and can be applied either indoors or outdoors. It is also said to be waterproof, dustless, skid-proof and not affected by

temperature changes. Available in five to 55 gallon drums, it is ready for use and requires no mixing.

The Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6, Ohio. (Item 26)

Fork Lift Clamp

A clamp designed to rotate drums or other containers for pouring, dumping or stacking operations has just been developed by this manufacturer. The attachment picks up drums from either horizontal or vertical position and provides full 180 degree forward and reverse rotation for rapid upending of drums.

The rotating arms are hydraulically actuated and controlled by lever

located conveniently to operator's position. Controlled rotation enables operator to discharge contents of drums at any selected angle up to the maximum lifting range of the truck. The unit may be easily mounted or detached to convert truck for standard fork operation, and the attachment is capable of handling a full 55 gallon drum with maximum weight of 1,000 pounds.

Yale & Towne Manufacturing Co., Materials Handling Div., 11000 Roosevelt Rd., Philadelphia, 15. (Item 27)

Manual Snow Plow

This new, inexpensive snow removal unit is said to be ideal for the small plant. The blade is 30 inches wide by 12 inches deep, and is adjustable to any angle. The two wheel assembly is welded to the frame by 3/16 inch brackets. The ½ inch axle is fitted with rubber tires and precision bearings. The handle bar is made of 13/16 inch steel pipe, and is 11 inches across the top. Four springs adjust the blade to push snow at any angle, the springs being controlled by wing nuts.

Leisure Industries, Dept. 881, 96-09 Metropolitan Ave., Forest Hills 75, N. Y. (Item 28)

Adhesive Dressings

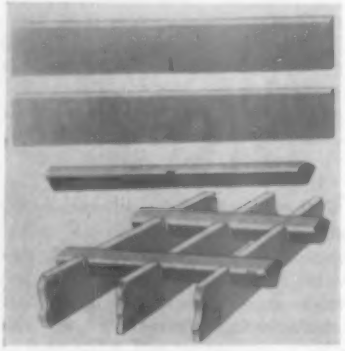
The Flex Aid Knuckle Bands have an H-form which permits positioning in spots such as knuckles, fingertips and toes where single strip pads are difficult to apply. The dressings have smooth edges and are flesh-colored. A crinoline backing protects the adhesive mass and keeps it sanitary until ready for use. Each bandage is individually sterile wrapped for hygienic protection. Knuckle bands come in stock packages of 100 and 50 component units of 14.

Medical Fabrics Co., Inc., 10 Mill St., Paterson 1, N. J. (Item 29)

Welded Grating

Known as Tri-Forged welded grating, this new product is of all-welded, one-piece construction with rectangular openings. Tri-Forged Welded Grating is constructed with double triangular cross bars permanently welded to rectangular bearing bars to produce one-piece construction. Special design of double triangular cross bars was the outcome of research which proved this cross section to be an ideal geometrical shape for pressure welding.

The tops of these double triangular cross bars form non-slip edges for greater traction and safety. For sure footing in extremely slippery areas, bearing bars can be supplied with serrated edges. The adequately sized standard openings between bearings across bars provide for the passage of a maximum amount of



light and ventilation. Without acute angles, nuts, bolts and rivet heads, clogging with dirt or grease is minimized. Panels are available in widths up to three feet. Lengths can be exactly as called for, up to lengths in which bearing bar material is available.

Dravo Corp., 1203 Dravo Bldg., Pittsburgh 22, Pa. (Item 30)

Vacuum Cup Lift

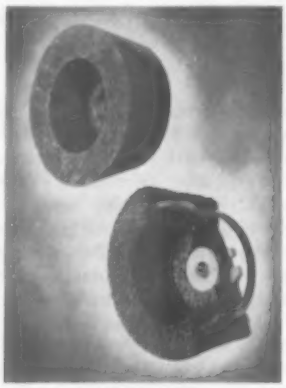
The new Vac-Lift provides a safe method for handling flat, non-porous material such as television tubes, sheet metal, plate glass, refrigerator and range housings, stampings and castings, boxes, etc. It can be used for any operation where material is moved by hand or by sling or hook.

By placing the vacuum cup on the work, a tight seal is created. Easy one-hand operation permits accurate spotting of the load. The operator releases the load with a fingertip control. This unit is made up of the Ingersoll-Rand Air-Bloc Hoist, the compact, easy-to-operate Pendent Throttle, and a specially designed vacuum cup. No special vacuum system is needed; the air that operates the hoist creates the vacuum. The load is also released by air.

Ingersoll-Rand Co., 11 Broadway, New York 4. (Item 31)

Grinding Wheels

The two rings embedded directly in the usable portion of the wheel illustrated are called Grind-Away safety rings. These rings are said to have greater tensile strength than steel, but at the same time will abrade away during the normal cut-



ting of the wheel without any interference to the grinding action. This makes it possible to reinforce the wheel where the actual reinforcement is needed.

According to the manufacturer, tests of this new wheel show that cracked wheels have been run up to 20 per cent above normal operating speed without the wheel exploding. This safety feature has been extended at present only to straight wheels, and type 5, 6 and 11 cups for portable grinders.

Colonial Abrasive Products Co., Conshohocken, Pa. (Item 32)

News Items

The Fibre-Metals Products Company manufactures a full line of The Kotula Company of New York City to handle advertising and public relations, according to an announcement by Charles Bowers, President of Fibre-Metal.

The Fibre-Metal Products Company manufacturers a full line of welding accessories and industrial safety equipment which is distributed nationally through dealers and distributors, much of it under their trade marks. The company will mark its 50th anniversary during 1955.

* * *

James S. Hubbard and Charles J. Martin are newly appointed sales managers of Wyandotte Chemicals Corporation's district offices in Boston and Buffalo, respectively. Both appointments were effective January 2, as announced by Fred Tholen, sales manager of the J. B. Ford Division of Wyandotte Chemicals Corp.

Mr. Hubbard, a native of Richmond, Va., has represented Wyandotte Chemicals for six years. Mr. Martin, a native of New York City, has represented Wyandotte in that area for over six years. Both Mr. Hubbard and Mr. Martin have thorough and practical field experience in the industries served by Wyandotte Chemicals' cleaning, washing, germicidal, metal cleaning and absorbent products.

* * *

Fred C. Hild has just announced that Mr. Joseph Roti has succeeded him as president of the Hild Floor Machine Company. Henry Metscher will continue as vice-president and there will be no additional changes in personnel. Mr. Hild will remain in the company's Chicago headquarters until February 1. Following this date, he will reside in Florida.

* * *

Gro-Cord Rubber Co., specialists in the manufacture of work and industrial safety soling materials, has announced a new service to industry through its Industrial Division. The division will work directly with safety engineers in the selection of

safety soles for their particular operations. The division will be headed by D. J. Wrigglesworth, who has had long experience with footwear in industry. Mr. Wrigglesworth will provide a consulting service to safety engineers and manufacturers of safety shoes.

* * *

E. W. Bullard, Jr., sales manager of the E. D. Bullard Company, San Francisco, announces appointment of D. R. Metzler as export manager. Metzler is a graduate of the School of Mineral Industry, Pennsylvania

State University.

Prior to joining the Bullard Company, Metzler worked throughout Latin America as a safety equipment sales engineer, with headquarters in Caracas, Venezuela. He had previously been employed in mining and petroleum geological work. He is a member of the American Society of Safety Engineers.

* * *

A new branch, the third to be opened this year by the Boyer-Campbell Company, is located at 36561 Plymouth Road (Livonia) Plymouth, Mich. This one was established primarily to serve Northwest Detroit, Wayne, Northville, Plymouth, Ypsilanti, Ann Arbor and Chelsea with a complete line of industrial and safety equipment. Manager of this new branch is Robert A. Foster, who has been with the company for 14 years.

* * *

A new ultra-modern structure housing the basic and applied research laboratories of Pittsburgh Plate Glass Company's Paint and Brush Division was officially opened December 10. Prior to the opening of the laboratory at Springdale, Pittsburgh Plate's basic and applied paint and plastics research operations were located at Milwaukee.

The main research building and pilot plant is a three-story concrete structure with brick facing. The new building is designed to harmonize with the firm's adjoining streamlined paint and Selectron plastics producing plant which was built following World War II. The new facilities provide 68,000 square feet of floor space, and the laboratory is completely air conditioned. Dr. H. L. Gerhart is director of research, Dr. S. W. Gloyer is assistant director of research, and Dr. E. W. Moffett is technical manager.

* * *

John B. Moore Corp. has announced appointment of Stanley H. Henry, of Ann Arbor, Mich., as technical service representative for lower Michigan territory. Andrew C. Kasnik, of Euclid, Ohio, was also appointed to handle sales in the Ohio territory. The company further plans to establish warehouse stocks at Cleveland to accommodate the requirements of its Ohio accounts. This will raise the company's warehouse points to six, and supplement those now established at Pittsburgh, Boston, Detroit, Kansas City and Los Angeles. The main office and plant of this manufacturer of solvents, industrial cleaners and related equipment is in Nutley, New Jersey.

* * *

The Leschen Wire Rope Division of H. K. Porter Company, Inc., has announced two new locations. The new address of their Seattle warehouse and district sales office is 2724 First Avenue South. The second move introduces this Division to the Los Angeles area, where their new warehouse and sales office will be located at 6424 East Fleet Street.

* * *

Multi-Clean Products, Inc., St. Paul, Minn., has announced expansion of manufacturing, cooling and storage facilities for floor finishes and floor cleaners. The move will increase the company's liquids production by nearly 25 per cent in 1955, according to N. H. McRae, president.

Additions to the present chemical plant include installation of an independent high pressure boiler and hot water system, increased bulk storage facilities, another steam jacketed stainless steel kettle for cooking wax, a 1,000 gallon agitator type tank for soap manufacturing, and a 1,000 gallon stainless steel agitator type tank for the manufacture of synthetic soaps.

TRADE PUBLICATIONS

These trade publications will keep you up-to-the-minute on new developments in safety equipment and health products. All catalogs are free, and will be sent without obligation. Just circle publication number on the Reader Service Postcard.

1. Plastic Eye Protectors: Better resistance of plastic eyewear to impact, chemicals, and sparks plus finer optical qualities are featured in this catalog. Retractable temples, lens shapes, colors and ease of lens changing are also noted. Line of plastic lens glasses, goggles and face shields illustrated. Watchemoket Optical Co.

2. "Polyethylene Ware for Laboratory Use": A new 8-page brochure lists 50 different laboratory items made of polyethylene. Some of the items shown are: narrow mouth bottles, beakers, funnels, tubing and sheeting, hydrometer jars, test tubes, centrifuge tubes, spigots, line valves, bottle carriers, etc. Scientific Glass Apparatus Co., Inc.

3. Emergency Lighting: Battery selection techniques are emphasized in this bulletin 210. The manual deals with storage batteries for stand-by power, emergency lighting and switchgear applications. A discussion of changing equipment and simplified battery maintenance techniques also is included. The Electric Storage Battery Co.

4. Safety Gratings: Catalog No. BC-1 describes and illustrates various types of gratings, platforms, ramps, ladders, flooring, catwalks, deck boards, etc. It also contains a complete line of truck and trailer safety equipment, including grille guards, gates, brackets, safety steps, etc. Bustin Firm-Grip Grating Corp.

5. "Homer Hercules Permanent Magnetic Pulleys": Applications and features are described in the new illustrated 8-page bulletin PY-260. These pulleys automatically remove tramp iron from sand, slag, ore, chemicals, coal, cement, gravel, foods, feeds, etc., and seperate ferrous from non-ferrous materials. Diagrams, performance data, specifications and a guide for selecting proper size included. The Homer Manufacturing Co., Inc.

6. Guard Your Eyesight: The Silicone Paper Company of America makes available a book that men interested in safety find invaluable: "Only One Pair to a Customer"—the informative story of sight and eye safety. Silicone Paper Co. of America.

7. Fyre-Armor Garments for Fire Fighting: Catalog features aluminized fire rescue suits and heat protective clothing for industry. Some of the items are: face shields with adjustable head rings for universal fit, full length bib-type aprons, full length aprons with half sleeves and shoulder protectors, leggings with attached spats, arm sleeves, vests, etc. Far-Ex Corp.

8. Drum Opening Tool: A fully illustrated two-color, four-page bulletin describes the latest design in the Merrill-O'Brien steel drum opening tool. This latest design employs a detachable blade and pivot, so designed that it simplifies resharpening or replacement if necessary. Complete with specifications and directions for use. Merrill Brothers.

9. How to Build Your Own Safety Guards: Bulletin illustrates and gives full details on how to build safety guards for gears, belts, flywheels and all moving parts of machines, as well as guards for individual punch press dies. Harrington & King Perforating Co.

10. Stainless Steel Floor Grating: 4-page, 2 color folder describes stainless steel floor grating especially useful in the chemical, oil and packing industries. Included in the bulletin are standard table of safe loads and general engineering data. Kerrigan Iron Works, Inc.

11. "The ABC's of Spray Equipment": This 64-page booklet is written in non-technical language and is illustrated with drawings to give a clear picture of the overall spray painting subject. The booklet is said to be of great interest to spray operators, automobile and furniture finishers, maintenance painters, and commercial spray painters. The booklet has a question and answer format. Each basic item of equipment used in spray painting is given comprehensive editorial treatment covering every phase from operation to maintenance. The DeVilbiss Co.

12. Linemen's Equipment: A complete line of linemen's equipment is described and illustrated in this 60-page, 2 color catalog. Some of the items shown are: electricians' belts, bolt cutters, linemen's boots, climbers, flares, gloves, knives, pliers, tool bags, etc. W. M. Bashlin Co.

13. Respiratory Equipment: Featured in this 26-page catalog are respirators for dusts, fumes, gases, vapors, mists, sprays and smoke; helmets and hoods for dusts, acids, splashing, grinding, sandblasting, welding and chipping; and gas masks for all industrial gases, vapors, smoke, etc. Pulmosan Safety Equipment Corp.

14. Floor Treatments: 7-page illustrated booklet gives answers to specific problems in caring for cement, terrazo, asphalt, linoleum, rubber, vinyl or latex composition, wood and other special type floors. Tells how products should be used. Hillyard Chemical Co.

15. Safety Signs: Bulletin features signs to promote good plant housekeeping. Has sample sign to be detached and used along with information on similar permanent signs painted on steel. Stonehouse Signs, Inc.

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Haggard's SAVE-A-LIFE . . . a combination litter and splint, designed for *modern* accident care. Made of plywood and aluminum, with many exclusive features for traction, resuscitation and safe, sure transportation.

COMPACT, FOOLPROOF

Folds for back-pack or car-trunk. Goes easily through small, narrow openings, up stairways. Fits seat-tops of any automobile. WRITE for folder, prices, names of prominent users.

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FOLDING STRETCHER
and fracture board

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PAIN . . .
SHOCK . . .
SPRAY IT!

. . . the best and safest method for the "first aider" because he doesn't touch the patient!

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Doctors agree that certain basic conditions are present in all burn cases. The "first aider" is qualified only to deal with the first three: Relieve Pain, Prevent Infection, Treat Shock. Spraying burns does this best. And the MSco assortment of Burn Spray Kits is the largest ever offered: Americaine or Kip Antiseptic Oil in either compact Unit-Type Packets with Pressure Cartridge Spray or Complete Burn Spray Kits with Aerosol Dispensers; Foille and Hydrosulphosol Burn Spray Kits; Fire Department Kits. MSco also supplies all standard burn ointments in unit form for first aid kits. See your MSco distributor for a demonstration or write for details.

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Medical Supply Company
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16. Aluminum Ladders: Bulletin lists lightness of weight, strength, and rust, rot, mildew and corrosion resistance of aluminum ladders. Single ladders, extension ladders and step ladders shown. Specifications of ladders given including antislip treads on all models. Patent Scaffolding Co., Inc.

17. Industrial Magnifiers: 24-page booklet gives detailed information concerning industrial magnifiers including technical information and instructions as to use. Many styles of magnifiers are pictured and described. Also contains data on microscopes and projectors. Bausch & Lomb Optical Co.

18. Electric Hoists: 12-page bulletin describes Speedway electric hoists of 500 to 4,000 pound capacities. Fully illustrates and explains design features and gives details on suspension and conductor systems. Clearance data and specifications included. Wright Hoist Division, American Chain and Cable Co.

19. To Keep Wire Rope at Work: 82-page handbook entitled: "Here's How to Keep Your Wire Rope Working," is filled with practical tips on care and use of wire rope. Tells how wire rope is constructed, what types are suited to various jobs, how to install it. Covers such subjects as abrasion, lubrication, avoiding kinks, alignment of sheaves, winding on drums, bending fatigue, wire breaks and when to discard a wire rope. Wire Rope Division, American Chain and Cable Co.

20. Neoprene Design Book: This illustrated bulletin discusses the properties of Neoprene, showing how they are utilized in products made from this chemical rubber, covers its toughness, hardness range, air retention, performance under load, at extreme temperatures, flame and chemical resistance. Rubber Chemical Division, E. I. du Pont de Nemours & Co., Inc.

21. On-the-Job Feeding: Literature describes equipment for inside or outdoor industrial feeding. Mobile canteens and cafeterias, food carriers and liquid dispensers illustrated. Vacuum Can Co.

22. Floor Maintenance: Bulletin illustrates and gives practical applications, details on floor machines and accessories and a wide range of floor cleaners, waxes, and other preparations. Finnell System, Inc.

"VEKI" SAFETY CAP

DESIGNED FOR GREATEST INDUSTRIAL SAFETY

VEKI's larger, roomier elastic-type snood is designed specifically for enclosing more hair than any conventional type cap . . . full protection for all hair all the time! Front of twill. Back is made of mesh—can also be had in solid or flame-proof materials. Navy blue, and brown. Adjusts to all head sizes. Descriptive literature on request.

Manufacturers and distributors of a complete line of safety clothing and equipment.

Write Dept. NS-2 for information regarding your needs.

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These low cost—foolproof fire detectors "Scream Out" a 10 minute, 95 decibel warning whistle.
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Advertisers' Index

A

Alan Wood Steel Co. 78
Albina Engine & Machine Works, Inc. 105
American Abrasive Metals Co. 84
American Chain & Cable Co. 83
American Optical Co. ..... B.C.
American Tel. & Tel. Co. 81
Ampco Metal, Inc. 72
Atlas Industrial Corp. 76

B

Ballymore Company 109
Bausch & Lomb Optical Co. 57
Bradley Washfountain Co. 105
Breck, John H., Inc. 77
Brossard, Lester L., Co. 109
Brulin & Co., Inc. 94
Buffalo Fire Appliance Corp. 85
Bullard, E. D., Co. 114-117

C

Carhoff Co. 117
Chicago Eye Shield Co. ..... I.B.C.
Chicago Watchclock Co. 101
Columbus McKinnon Chain Corp. 87
Coppus Engineering Co. 5
Corbin Cabinet Lock Div. 95
Cotterman, I. D. 116
C-O-Two-Pyrene 49
Cover, H. S. 108

D

E. I. Du Pont de Nemours & Co. 102

E

Eagle Mfg. Co. 62
Economy Engineering Co. 107
Ellwood Safety Appliance Co. 113
Employers Mutual of Wausau 79

F

Finnell Systems, Inc. 120
Fyr-Fyter Co. 82
Fyr-Larm Co., Inc. 130

G

Gets-A-Lite Co. 119
Globe Co. 111
Good-Lite Mfg. Co. 116
Gro-Cord Rubber Co. 43

H

Harrington & King Perforating Co. 106
Hood Rubber Co. 63
Hy-Test Div., International Shoe Co. 16

I

Industrial Products Co. 111

J

Jackson Products, Inc. 54

K

Kennedy-Ingalls, V. E., Co. 129
Kidde, Walter, & Co. 65
Kimberly-Clark, Corp. 75

L

Legge, Walter G., Inc. 86
Lehigh Safety Shoe Co. 3

M

Macwhyte Company 13
McAn, Thom, Safety Shoes 11
McDonald, B. F., Co. 115
Medford Mfg. Co. 129
Medical Supply Co. 129
Mine Safety Appliance Co. ..... I.F.C.

N

National Foam System, Inc. 59
National Safety Council 53-71-98-99-100

O

Onox, Inc. 107
Oxy-Catalyst, Inc. 88

P

Patent Scaffolding Co., Inc. 60
Permamix Corp. 106
Plymouth Cordage Co. 44-45
Prairie State Products Co. 104
Pyrene-C-O-Two 49

R

Randolph Industrial Co. 89
Ready Made Sign Co. 103
Record Industrial Co. 67
Rockwood Sprinkler Co. 46

S

Safety Box Toe Co. 7
Safety First Supply Co. 108
Safety Tower Ladder Co. 129
Scott Aviation Corp. 47
Sellstrom Mfg. Co. 112
Speedi-Dri Corp. 57
Standard Industrial Products Co. 90
Standard Safety Equipment Co. 101
Stephenson Corp. 118
Stonehouse Signs, Inc. 51
Surety Rubber Co. 104

T

Tamms Industries, Inc. 130
Taylor, S. G., Chain Co. 91

U

U. S. Safety Service Co. 9
Union Wire Rope Corp. 69
U. S. Treasury 110

V

Vacuum Can Co. 118
Vonnegut Hardware Co. 93

W

Wagner Sign Service, Inc. 15
Watchmoket Optical Co. 41
Wheeler Protective Apparel, Inc. 119
Wilkins Co., Inc. 96
Williams Jewelry & Mfg. Co. 113
Willson Products, Inc. 1
Wind-Kor Automatic Safety Device Co. 115
Wyandotte Chemicals Corp. 92

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Here's how it works—

Printed below are two identical Reader Service postcards—the bottom one for your use; the top one for later readers of this issue. The numbers listed on each card are keyed to products advertised and the new safety equipment and trade publications described on pages 121 through 129. Just circle the items you want to know more about, and we will ask the manufacturer to send you full information without obligation. Both cards are perforated for easy removal, and no postage is required.

New Safety Equipment

Products featured in this section have been carefully reviewed by Council engineers so as to bring you only what's new and reliable in the safety field. Only new safety and health products, or newsworthy improvements in existing equipment are eligible for listing.

Trade Publications

Here's a wealth of helpful trade literature—catalogs, spec sheets, booklets, brochures—that will help you compare before you buy. Whether you are in the market now, or think you may be at a later date, you'll want these valuable references in your safety equipment data file.

Products Advertised

As you read through this issue of the NEWS, you will find advertisements describing equipment that may help you solve some of your accident problems. Instead of making a "mental note," make sure you get full information by circling the corresponding page number on the Reader Service postcard. The letters L, R, T and B locate the ads on the page—left, right, top and bottom. IFC—inside front cover; IBC—inside back cover; BC—back cover.

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TRADE PUBLICATIONS SECTION:

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46	47	49	51	53	54	57	59	60	62	63	65	67
69	71	72	75	76	77	78	79	82	83	84	85	86
87	88	89	90	91	92	93	94	95	96	101T	101B	102
103	104T	104B	105T	105B	106T	106B	107R-L	108T	108B	109T	109B	111T
111B	112	113T	113B	114	115L	115R	116L	116R	117L	117R	118L	118R
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69	71	72	75	76	77	78	79	82	83	84	85	86
87	88	89	90	91	92	93	94	95	96	101T	101B	102
103	104T	104B	105T	105B	106T	106B	107R-L	108T	108B	109T	109B	111T
111B	112	113T	113B	114	115L	115R	116L	116R	117L	117R	118L	118R
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The advertising policy of the NEWS requires that all equipment and products meet established codes and standards, have the approval of recognized testing agencies, or have proven their value through actual use in industry. Council engineers and technicians screen every advertisement to make sure that product description is accurate, and performance claims verified by reliable sources. It should not be construed, however, that products advertised are approved or endorsed by the National Safety Council.

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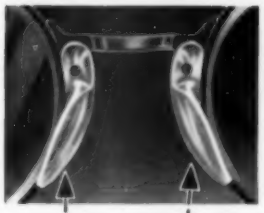

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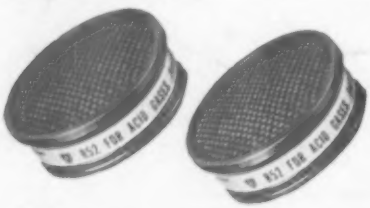
Here's *complete* respiratory protection in one "package"! If you have several respiratory hazards to control, the AO R5000 will save you inventory problems and money. This ingenious twin cartridge respirator converts to many types of protection quickly merely by interchanging the filters and cartridges. Ask your nearest AO Safety Products Representative.

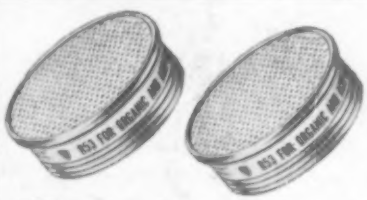
R50 — For combination of all dusts, not significantly more toxic than lead. B.M.2156

R50A — used with R50, converts to a dust and mist respirator. Protects against all dusts not significantly more toxic than lead, pneumoconiosis-producing mists, chromic acid mists. B.M. 2156 includes B.M.2156A

R51 — For light organic vapors and gases of paint spraying, degreasing, dry cleaning. B.M.2304

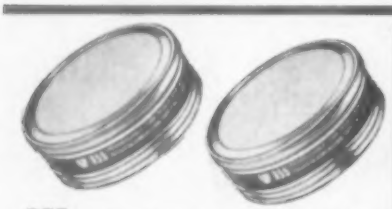


R52 — For acid gases, and mists of plating operations, pickling tanks, etc.

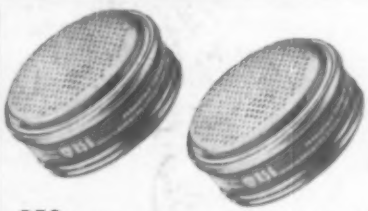


R53 — For combined acid and organic gases like carbon tetrachloride and acetic acid.

R54 — For protection against low or nuisance concentrations of ammonia.



R55 — For those who are exposed to both organic vapors and all dusts not significantly more toxic than lead. B.M.2305



R56 — For fumes produced in welding, burning, smelting and refining. B.M.2163

R57 — For dusts, mists, fumes, significantly *more* toxic than lead including radioactive particulate matter.

*One Face Piece Takes 9 Filters and Cartridges

†T.M. Reg. by American Optical Company

American Optical
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